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ABSTRACT

This document contains materials from a seminar on preparing youth with disabilities for postsecondary education and quality employment held at the National Capacity Building Institute in the summer of 2001. The agenda for the Institute is provided along with the following papers: (1) "Postsecondary Education Supports for Students with Disabilities: A Review and Response" (Robert A. Stodden); (2) "The Development of Self-Determination and Self-Advocacy Skills: Essential Keys for Students with Disabilities" (Margo Izzo and Peg Lamb); (3) "Roles of Technology in Preparing Youth with Disabilities for Postsecondary Education and Employment" (Sheryl Burgstahler); and (4) "Current Challenges to Successfully Supporting and/or Accommodating the Desires and Needs of Youth with Disabilities in Postsecondary Education to Employment" (Teresa Whelley). Briefs are then provided on self-determination and self-advocacy skills (Margo Vreeburg Izzo), promising practice resulting in improved program and student outcomes (Margo Vreeburg Izzo and Jennifer Hertzfeld), self-determination curriculum (Brian Shaughnessy and JoAnn W. L. Yuen), postsecondary support characteristics (Michael N. Sharpe), effective instructional strategies for students with learning disabilities in postsecondary education (E. E. Getzel and others), accessibility policy for postsecondary distance education (John Anderson), transition from high school to postsecondary education and employment for students with disabilities (Sheryl Burgstahler and Weol Soon Kim-Rupnow), and inclusion of persons with disabilities in science, engineering, and mathematics (Richard Radtke and others). (Papers include references.) (CR)

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National Capacity Building Institute

Summer 2001

Preparing Youth with Disabilities for Successful Participation in Postsecondary Education & Employment

July 22-23 Portland Oregon

National Center for the Study of Postsecondary Educational Supports

National Center on Secondary Education and Transition

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National Capacity Building Institute

Summer 2001

Preparing Youth with Disabilities for Successful Participation in Postsecondary Education & Employment

Sponsored by:

National Center for the Study of Postsecondary Educational Supports
University of Hawaii at Manoa,
National Center on Secondary Education and Transition
University of Minnesota

Secondary Education, Transition, and Other Support Persons
Preparing Youth with Disabilities to Attain
"High Expectations & Successful Post-school Outcomes"

July 22 & 23, 2001, Lloyd Center Doubletree Hotel, Portland, Oregon,
in coordination with the Annual AHEAD Conference, July 24, 25, & 26, 2001.

Who Should Attend: National, State, District, & School/Community Level Persons, including secondary school educators, special educators, counselors, transition coordinators, parents, and other persons involved with postsecondary education & employment opportunities for youth with disabilities. The Institute is designed to accommodate individuals as well as district or state level teams of persons working with secondary school transition issues.

Outcomes to be Achieved: All participants will receive a notebook of curriculum materials including (1) papers sharing the latest perspective and research-based practice, (2) research briefs providing the latest data in support of future practice, (3) web-based library of annotated readings providing content depth to participants, & (4) interactive problem solving formats to guide small group work. Participants will also have the opportunity to participate in pre-post institute on-line discussions and Q&A sessions with main speakers and other leaders.

Main Speakers:

Robert A. Stodden, Ph.D., Director, National Center for the Study of Postsecondary Educational Supports (NCSPES) & Director, Post-school Outcomes Network, National Center on Secondary Education & Transition (NCSET), University of Hawaii at Manoa.

Teresa Whelley, Ed.D., Coordinator, National Center for the Study of Postsecondary Educational Supports, University of Hawaii at Manoa.

Soon Kim-Rupnow, Ph.D., Researcher, National Center for the Study of Postsecondary Educational Supports, University of Hawaii at Manoa.

Sheryl Burgstahler, Ph.D., Director, DO-IT Programs, University of Washington and member of Post-school Outcomes Network, NCSET.

Margo Izzo, Ph.D., Project Director, Nisonger Center, Ohio State University and member of the Post-school Outcomes Network, NCSET.

Introduction

For the past twenty years, federal funding and policy initiatives have focused upon the secondary school preparation and transition of youth with disabilities for employment. Despite data showing the economic and social value of a postsecondary education, little attention or thought has been given to secondary school preparation and transition of youth with disabilities to achieve these benefits. Until recently little was known about the knowledge, skills and behaviors required of youth with disabilities to access and succeed in postsecondary education and quality employment. During the past three years, researchers at NCSPES and others have studied the preparation needs of youth with disabilities to successfully access, participate and complete postsecondary education and obtain quality employment.

The focus of the **2001 Summer Institute** will be upon the latest research findings, which offer implications for secondary school educators, transition specialist, parents, and other supporting persons and agencies concerned with the preparation of youth with disabilities for postsecondary education and quality employment. The Institute is planned to occur in three phases of activity, as follows: (1) preliminary period of online readings and discussions with authors & researchers (July 1 – July 22, 2001); (2) two days of face-to-face intensive workshop format in Portland, Oregon (July 22 -23, 2001); and (3) one month of online follow-up discussions surrounding next steps and implementation of new knowledge and skills. Also, a third day of the Institute focused upon collaboration with postsecondary education support personnel, will be offered on July 24, 2001, as a part of the AHEAD Conference – Institute participants are encouraged to take part in the third day with other AHEAD attendee's.

Agenda: Capacity Building Institute, July 22-23, 2001
Portland Oregon

July 1 - July 22, 2001	Web site posting of readings and issuance of passwords to institute participants. Activate (issuance of passwords) question/answer and discussion group assignments. Conduct discussions with authors and researchers around issues identified in readings.
Saturday - July 21, 2001	(Pre-Institute Evening Gathering - Optional) 5:00 – 6:00pm Doubletree Hotel, Eduardo's Cantina Bar
Sunday - July, 22 2001	**Day One of the Institute**
7:00 - 8:30 a.m.:	Experiencing the Great Northwest morning (optional activity to be posted the night before)
8:30 - 9:00 a.m.:	Continental Breakfast & Review of Curriculum Materials
9:00 - 9:30 a.m.:	Introductions and Review of Institute Format
9:30 - 10:30 a.m.:	**Robert Stodden** A Framework for Addressing Issues and Needs in the Preparation of Youth with Disabilities for Postsecondary Education & Employment.
10:30 - 11:30 a.m.:	Reaction and Discussion of Framework: Building Capacity New Information for Policy, Procedure and Practice
11:30 - 1:00 p.m.:	Lunch (provided) and Structured Discussion
1:00 - 2:00.p.m.:	**Margo Izzo & Peg Lamb** Student Self-determination & Advocacy Skills Preparing Youth with Disabilities for Postsecondary Education & Employment.
2:00 - 3:00 p.m.:	Reaction and Discussion of Challenges: Building Capacity for New Policy, Procedure, & Practice.
3:00 - 5:00 p.m.:	Break for Thought, Reflection & Problem Solving
5:00 - 6:00 p.m.:	Individual & Small Group Sharing of Expanded Thoughts
6:30 p.m. - on:	Evening Activities & Discussion (Optional)

Monday - July 23, 2001	**Day 2 of the Institute**
7:00 - 8:30 a.m.:	Experiencing the Great Northwest Morning (Optional Activities)
8:30 - 9:00 a.m.:	Continental Breakfast & Review of the Day (provided)
9:00 - 9:30 a.m.:	Overview of Format for the Day
9:30 - 10:30 a.m.:	**Sheryl Burgstahler & Soon Kim-Rupnow** Role of Technology in the Successful Preparation of Youth with Disabilities for Postsecondary Education & Employment
10:30 - 11:30 a.m.:	Reaction and Discussion: Implications for Policy, Procedure, and Practice
11:30 - 1:00 p.m.:	Lunch (provided) and Discussion with the Office of Postsecondary Education (OPE) Demonstration Project Directors
1:00 - 2:00 p.m.:	**Teresa Whelley** Challenges to Successfully Supporting and/or Accommodating the Needs of Youth with Disabilities in Postsecondary Education & Employment.
2:00 - 3:00 p.m.:	Individual and Small Group Thought and Reflection
3:00 - 4:00 p.m.:	Reaction, Challenges and Steps for Future Action. (Jane Storms, Western Regional Resource Center)
4:00 p.m.:	Closing Remarks – Robert Stodden
6:30 p.m. - on:	Evening Activities (Optional)
Tuesday - July 24, 2001	**AHEAD Institute on Postsecondary Supports** - Optional & held at the Convention Center with separate registration - see web ULR at www.ahead.org. Title: What if Youth with Disabilities were Prepared for Success in Postsecondary Education: New Roles for Disability Support Personnel in Postsecondary Education. The Institute will address two critical questions for disability support personnel in postsecondary education: (1) What are the expectations and preparation that youth with disabilities bring with them when entering postsecondary education, and (2) What constitutes a "quality educational experience" compared to an "accommodated educational experience" in secondary education and postsecondary education settings?

Stodden
Discussion Questions

1. In higher education, what are the responsibilities of the student with a disability, in terms of the accommodation of their disability, versus the responsibilities of the institution?

2. What possible factors are responsible for the increase in the number of post-secondary students reporting a disability over the past several years?

3. How does the cause of an increase in post-secondary students reporting a disability effect how post-secondary educators must respond to this increase?

4. What is the role of faculty members in terms of seeking out information about diverse learning needs, and improving and refining their teaching strategies to accommodate students with disabilities? How does their responsibility to students with disabilities compare to their responsibility to other students with diverse experiences and needs (i.e. students from ethnic minorities, women, older students; etc.)?

Postsecondary Education Supports for Students with Disabilities: A Review and Response

Robert A. Stodden, Ph.D.

Abstract

Washington D.C., July 23, 1998- Americans with disabilities still face gaps in securing jobs, education, accessible public transportation and many areas of daily life. Those findings were presented in a new U.S. survey of 1,000 adults with disabilities announced today by the National Organization on Disability (N.O.D.). Alan A. Reich, President of N.O.D., stated "[t]hese gaps are unconscionable. America must do better" (N.O.D., p.1). Only 29% of persons with disabilities, ages 18-64, work full or part time, compared to 79% of the non disabled population, and approximately one in five (20%) adults with disabilities have not completed high school, compared to 90% for adults with no disabilities (N.O.D., p.1). This article conducts an extensive review of literature concerning participation and support of persons with disabilities in postsecondary education settings. Also, the article discusses efforts to respond to identified needs and issues through the efforts of a Rehabilitation, Research and Training Center focused upon Post Secondary Education Supports at the University of Hawaii, Manoa.

Introduction

The Amended Rehabilitation Act of 1992 (PL 102-569) clearly acknowledges that "disability is a natural part of the human experience and in no way diminishes the civil rights of individuals." Despite this legislation, as noted by Alan Reich, persons with disabilities continually encounter various forms of discrimination in such critical areas as postsecondary education, transportation, health care, and employment (Walker, 1996; Esses, 1993). Given the increasing need for persons with disabilities to succeed in postsecondary educational programs, thus being able to access and participate successfully in the work force, it is imperative that we understand present and future needs, emerging strategies, technologies, and approaches to enhancing access, participation, and performance for persons with disabilities in postsecondary education.

The passage of the Americans with Disabilities Act (ADA) in 1990 (PL 101-336), along with the recent reauthorization of the Individuals with Disabilities Education Amendments of 1997 (PL 105-17), has led to an expanding social awareness of accessibility and disability issues, as well as increased numbers of students with disabilities seeking access to colleges, universities, and vocational technical programs (Adelmen & Vogel, 1992; Blackorby & Wagner, 1996; Benz, Doren

& Yovanoff, 1998; Bursuck & Rose, 1992; Fairweather & Shaver, 1991; Henderson, 1995; Stodden, 1998). The number of postsecondary students reporting a disability has increased dramatically, climbing from 2.6% in 1978, to 9.2% in 1994, to nearly 19% in 1996 (Blackorby & Wagner, 1996; Gajar, 1992, 1998; Wagner & Blackorby, 1996). Since 1990 there has been a 90% increase in the number of colleges/universities, technical institutions, community colleges and vocational technical centers offering opportunities for persons with disabilities to continue their education (Brinkerhoff, Shaw, & McGuire, 1992; 1993; Bursuck & Rose, 1992; Pierangelo & Crane, 1997). Nonetheless the enrollment of people with disabilities in postsecondary institutions is still 50% lower than enrollment among the general population. This gap in educational attainment significantly affects the long-term career and employment prospects for persons with disabilities.

Impact of Postsecondary Education on Employment

Over the past twenty years changes in the nation's labor market have increased the importance of having a postsecondary education in order to be able to compete in the job market. Whether it is college, adult and continuing education, or technical preparation, postsecondary education plays a major role in preparing persons for employment and career opportunities. Students who continue their education after high school maximize their preparedness for careers in today's changing economy as they learn the higher order thinking and technical skills necessary to take advantage of current and future job market trends.

Research demonstrates that persons with disabilities are negatively and disproportionately affected by changes in general employment trends (Yelin & Katz, 1994a, 1994b). In recent studies, older men with disabilities experienced a higher rate of decline in labor force participation rates than older men without disabilities (Yelin & Katz, 1994a). Similarly, persons with disabilities experienced a larger relative drop-off in employment in the areas of manufacturing than persons without disabilities, while also experiencing a larger relative increase in employment services (Yelin, 1992; Yelin & Katz, 1994b). Thus it appears that people with disabilities, as with other minority groups, face labor market liabilities which often place them in the position of being the last-hired and the first-fired (Trupin, Sebesta, Telin, & LaPlante, 1997; Zemsky & Odel, 1994). Indeed, findings indicate that disability may combine with gender, age, and race to place some persons with disabilities at a greater disadvantage in the job

market (Yelin & Katz, 1994a; Reskin & Roos, 1990).

With these poor employment figures for persons with disabilities, access to postsecondary education becomes that much more critical. A clear positive relationship between disability, level of education, and adult employment has been firmly established (Benz, et al., 1998; Blackorby & Wagner, 1996; Gilson, 1996; Reis, Neu, and McGuire, 1997). Gilson (1996) documents that the completion of some type of postsecondary education, including vocational education, significantly improves the chances of men and women with disabilities to secure decent and meaningful employment. In fact, employment rates for persons with disabilities demonstrate a stronger positive correlation between level of education and rate of employment than we see in statistical trends for the general population (Stodden, 1998). In 1996, the U.S. Bureau of Census statistics indicated labor force participation rates at 75.4% for persons with less than a high school diploma, 84.6% for those with a diploma, 87.8% for persons with some postsecondary education, and 89.7% among persons with at least four years of college. Proportionately, these labor force participation rates increase even more sharply when compared to increasing levels of education and persons with disabilities. Deplorably, only 15.6% of persons with less than a high school diploma currently participate in today's labor force. However, this participation doubles to 30.2% for those who have completed high school, triples to 45.1% for those with some postsecondary education, and climbs to 50.3% for disabled people with at least four years of college (Reskin & Roos, 1990; Yelin & Katz, 1994a, 1994b). As Gajar (1998) cautions, for individuals with disabilities, a university education is highly correlated with vocational options and financial success, or adult quality of life. Therefore, the cost of failure, both to these individuals as well as to society is a pressing concern (p. 384-85). Gajar's observation reinforces the necessity to: (a) focus attention on overcoming barriers to postsecondary education and employment for people with disabilities, and (b) identify educational accommodations and supports, including assistive technologies, that promote this population's successful completion of postsecondary education programs.

Barriers to Postsecondary Education

While the data show a consistent positive correlation between students with disabilities, valued employment prospects, and higher levels of education, as a population, postsecondary education enrollment levels for persons with disabili-

ties (although on-the-rise) remains low in comparison to the general population. For example, 25% of students with disabilities age 14 or older, as compared to only 12% of nondisabled students, do not even complete high school (OSEP, 1996). Of those who graduate, 19% of students with disabilities, as opposed to 56% of students without disabilities, attend a postsecondary school within the first two years of exiting high school. Three to five years after high school, 27% of students with disabilities, as opposed to 68% of students without disabilities, attend some form of postsecondary education (Blackorby & Wagner, 1996; OSEP, 1992).

According to OSEP's Results of the Second PASS Field Test (1996), an extensive study of the types of services required by youth with disabilities exiting secondary school and making their transition to adulthood and postsecondary school programs, 80% of the sample required some type of case management services (OSEP, 1996). Assistance and training related to the areas of communication, including speech/language therapy, interpreter services, reader services, Braille training, and tactile interpreting services were cited as primary needs for over a third of the total sample.

Even with these supports meeting their primary needs, students with disabilities face a host of systemic, socio/cultural, financial and personal factors that contribute to low postsecondary enrollment rates. One of the first studies regarding implementation of the ADA, conducted in 1993 by the National Council on Disability, found that there was still a need for information and technical assistance, that minority persons with disabilities were not being adequately served, and that persons with certain disabilities were not being supported by the current levels of ADA implementation (Pfeiffer & Finn, 1997).

Other social and cultural factors continue to play a major role in discouraging students with disabilities from pursuing higher education. Media stereotypes tend to depict the disabled as victims employed in low-skilled jobs. Expectations that a student with disabilities will garner any additional job skills after high school remain low (Margolis, 1990). Persons with disabilities continue to be poorly represented among faculty, staff, and educational administrators, thus depriving students with disabilities of role models for postsecondary success (Grosz, 1998). All these factors, in combination with low expectations from teachers, counselors, and sometimes even parents, create powerful psychological obstacles to the pursuit of higher education (Dooley-Dickey, 1991).

Even when people with disabilities over-

come barriers to enrollment in postsecondary education, disturbing evidence suggests that many of these students experience difficulty staying in and completing their programs of study (Blackorby & Wagner, 1996; Bursuck & Rose, 1992; N.O.D., 1998; Wagner & Blackorby, 1996; Witte, Philips, & Kakela, 1998). Failure to provide appropriate academic development services, supports, and programs for students with disabilities may cause them to achieve grade-point averages well below that of their nondisabled peers which, in turn, may hasten their withdrawal from postsecondary settings (Gajar, 1992, 1998). Further, Bursuck, and Rose (1992) have found that students with disabilities who earn a tangible certificate or degree take considerably longer to finish than nondisabled students. Clearly, postsecondary students with disabilities need more and better services, supports and programs both to access postsecondary education and to be successful in such a setting.

Regretfully, current research regarding the differential qualitative and quantitative effects of various accommodation services, supports, and programs upon postsecondary access, participation, and long-term outcomes (e.g., student retention, graduation, and vocational opportunity) is virtually nonexistent (Brinkerhoff, Shaw, & McGuire, 1993; Tindel, Heath, Hollenbeck, Almond, & Harniss, 1998; Gartin, Rumrill, & Serebreni, 1996). As Gajar (1998) chides, "the recent influx of students with disabilities into postsecondary settings has precluded the establishment of both a body of proven practices and a clear relationship between practices and outcomes. Services have evolved sporadically and programs have been pieced together in a haphazard manner (p.388)." It is essential that some basic data-based understanding of these issues be established through research. Studies need to be conducted not only on the characteristics and needs of the students with disabilities found in various postsecondary settings, but also on the unique characteristics of the postsecondary settings themselves (Gajar, 1992, 1998; Tindel, et al., 1998).

Self-determination: Turning Students into Self Advocates

The transition from secondary to postsecondary education for students with disabilities is complex and challenging. The differences between high school and postsecondary educational environments are more than cosmetic (Bursuck & Rose, 1992; Deshler, et al., 1996; Gajar, 1998). Students with disabilities graduating from high school move from a protective environment in which school personnel are legally responsible for identifying and providing appro-

priate services under the IDEA, to an environment in which the students are expected to identify themselves as a person with a disability and seek out and request specific accommodations under Section 504 and the Americans with Disabilities Act (ADA) (Gartin, et al., 1996, p. 33).

Under Section II and Section III of the ADA postsecondary educational institutions, are "required by law to provide any reasonable accommodation that may be necessary for those persons with disabilities to have equal access to educational opportunities and services available to nondisabled peers, if requested" (Pierangelo & Crane, 1997, p. 156, [italics in original]). Unquestionably, postsecondary education students are charged with the bulk of the responsibility for initiating, designing, and ensuring their own educational accommodations (Battle, Dickens-Wright, & Murphy, 1998; Day & Edwards, 1996; Gajar, 1998; Milani, 1996; Tucker, 1997). It is their responsibility to inform school officials of their disability, provide documentation of the disability, and propose viable options for meeting the unique accommodation needs specific to their disability (Gartin, et al., 1996; Gilson, 1996; Milani, 1996; Reis, et al., 1997). For students with disabilities, this means that in order to be able to access, participate and perform successfully in postsecondary programs, they must be personally responsible for linking any accommodations they may require to their course of study (Brinkerhoff, 1994). Thus, self-advocacy/self-determination, or more specifically the ability to express one's needs, the ability to make informed decisions, and then advocate for that decision are considered to be the most important skills for students with disabilities to possess before beginning their postsecondary experience (Battle, et al., 1998; Benz, et al., 1998; Dale, 1995; Deshler, et al., 1996; Miller, Sidney, et al., 1995; Rusch & Chadsey, 1998; Skinner, 1998; Wehmeyer & Schwartz, 1998). The role of self-advocacy in determining the success of postsecondary students with disabilities, thus, must be a key area of study for researchers and an area of program focus for those working in secondary education.

Decreases in contact among teachers and students, increases in academic competition, changes in student support networks, and a greater expectation that students will achieve on their own, add to the difficulties of making a successful transition to a postsecondary institution for youth with disabilities. In contrast to high school, postsecondary services, supports, and programs available to students with disabilities: (a) vary extensively across states as well as campus-to-cam-

pus; (b) are generally not well developed programmatically, and (c) tend to lean toward advocacy, informational services, or remediation of content rather than training in the compensation areas necessary for independent learning and self-reliance (Gajar, 1992, 1998; Deshler, et al., 1996; Reis, et al., 1997) (NCSPES, 2000a).

Existing Supports for Students with Disabilities

Though variable in quantity and quality, support services to students with disabilities are available at most of the nation's 3,000 postsecondary institutions. Required to meet access mandates of the 1977 passage of Section 504 of the amended Rehabilitation Act of 1973, and more recently, under the Americans with Disabilities Act, schools have had to insure that the programs they offer, including extracurricular activities, are accessible to students with disabilities. Postsecondary schools have done this in a number of ways—for example, by providing architectural access; aids and services necessary for effective communication; and by modifying policies, practices and procedures.

Buildings constructed or altered after June 3, 1977, have had to comply with the relevant accessibility code required by Section 504 and, after January 26, 1992, the ADA.

Qualified interpreters, assistive listening systems, captioning, TTYs, qualified readers, audio recordings, taped texts, Braille materials, large print materials, materials on computer disk, and adapted computer terminals are examples of auxiliary aids and services that provide effective communication. Legally, such services must be provided unless doing so would result in a fundamental alteration of the program or would result in undue financial or administrative burdens. According to a 1992 statement published by The Association on Higher Education and Disability (AHEAD), the U.S. Department of Education has yet to accept an argument for undue financial burden under Section 504. Any research program studying postsecondary supports should identify: (1) which of these services students find most effective; (2) how students would like to see the services delivered; and (3) how postsecondary institutions can accommodate student needs in ways that are empowering for students as well as being efficient and effective at the institutional level (NCSPES, 2000b) (Stodden & Dowrick, 2000a); (Stodden & Dowrick, 2000b).

One of the most challenging aspects of modifying classroom policies or practices for students with disabilities is that it requires prior thought and preparation. The difficulty lies in the

necessity to anticipate students needs and to be prepared to meet those needs, in advance. The actual modifications themselves, required by students with disabilities, may be relatively simple and inexpensive (John, 1993). Examples include rescheduling classes to an accessible location; early enrollment options for students with disabilities to allow time to arrange accommodations; substitution of specific courses required for completion of degree requirements; allowing students to use note takers or to tape-record lectures; allowing service animals in the classroom; or arranging for appropriate accommodations for test taking (Alster, 1997; Mellard, 1994). To reiterate, the only time when such modifications of policies and practices would not be required is when they would fundamentally alter the nature of the services, program, or activity.

It is important to remember that supports and services provided by postsecondary institutions are often relatively new and, thus, not yet well known by faculty members (Mellard, 1994; Minskoff, 1994) (NCSPES, 2000b). Faculty and other stakeholders, thus, may find it difficult to accommodate students simply because they lack an understanding of the students needs or familiarity with campus services (DeFur & Taymans, 1995; Scott, 1996). Moreover, the stigma attached to the need to self-identify for special attention, drives some students to elect not to disclose their disabilities in order to avoid being labeled disabled while on campus (Lynch & Gussel, 1996). Unfortunately, students who fail to identify themselves as disabled are often unable to access many of the supports designed to get them closer to having equal (rather than special) access to education (Gordon & Keiser, 1998) (NCSPES, 2000b).

Proposed Research Agenda

Although, a wide array of supports are being used to accommodate the needs of students with disabilities, understanding which specific accommodations are appropriate to the student and under what conditions these accommodations may be applied are issues that continue to dominate postsecondary conversations relative to students with disabilities. Definitions of what constitutes appropriate accommodations vary extensively (Eichhorn, 1997; Milani, 1996) (NCSPES, 2000b). Any research program, must plan to identify those emerging and exemplary strategies, technologies, services, supports, and programs that are most effective and successful in : (1) facilitating successful transition of students with disabilities from secondary to postsecondary settings, (2) improving student performance and graduation rates within those settings, and (3) promoting personally sat-

isfactory employment outcomes for persons with disabilities leaving postsecondary education.

Given that most disability related services are a relatively new requirement within the postsecondary environment, and, it is likely that a disabled student will run into obstacles when attempting to set up necessary support services, a number of relevant research questions may be proposed: (1) To what extent is the requirement that a person disclose his or her disability in order to obtain services a deterrent to postsecondary enrollment and completion? (2) Are vocational rehabilitation or other funding sources for services not covered under the ADA or Section 504 of the Rehabilitation Act readily available to postsecondary students? (3) What kind of impact have various services and supports, including various assistive devices, had on students access, participation, performance and completion of postsecondary education? (4) What are the systemic obstacles to service or support provision in postsecondary education? (5) To what extent does helping students develop self-advocacy/self-determination skills assist in the process of planning for transition into postsecondary settings and student success within the postsecondary setting? and (6) To what extent do postsecondary educational institutions provide transitional support to graduates as they attempt to enter the labor force, and how does this effect career/employment outcomes?

Response to the Proposed Research Agenda

The Center on Disability Studies, at the University of Hawaii at Manoa, has been working in collaboration with the National Institute on Disability and Rehabilitation Research (NIDRR), to implement a Rehabilitation Research and Training Center (RRTC) for the Study of Postsecondary Educational Supports. The purpose of this RRTC or the National Center for the Study of Postsecondary Educational Supports (NCSPES) is to explore ways to increase access to and improve educational and employment outcomes for students with disabilities, in a variety of postsecondary educational settings, and to directly involve students with disabilities, families, educators and other support persons in such research activities. The Center is focused on the study of current support practices and models of delivery, identifying barriers to educational practices, disability related services and transitional assistance, and providing training and technical assistance and information to support personnel, public and private rehabilitation personnel, career placement specialists, and students with disabilities. The Center is currently focusing on the following goals:

1. examine and evaluate the current status of educational supports, including individual academic accommodations, adaptive equipment, case management and coordination, advocacy, and personal counseling and career advising,
2. identify effective support practices and models of delivery that contribute to successful access, performance, and retention/completion of postsecondary programs,
3. identify specific barriers to the provision of disability related services in postsecondary education, including those related to policy and funding requirements,
4. assess the effectiveness of promising educational practices and disability related services that are important to career mobility and success in the workplace following participation in postsecondary education,
5. test the effectiveness of specific models of delivery that are believed to increase overall accessibility to educational supports and technologies,
6. identify the types of educational and transitional assistance that postsecondary programs provide to improve educational and subsequent labor market success fo persons with disabilities,
7. provide training, technical assistance, and information to educational support personnel, public and private rehabilitation personnel, career placement specialists, and students with disabilities based on the findings and implications of research, and implement a consumer-driven empowerment evaluation plan for assessing the RRTC's progress in achieving its goals.

Summary

With the goal of reducing personal, administrative, social, and cultural barriers to accessing and succeeding in postsecondary education programs, a systematic and strategic research approach has the potential to dramatically improve the quality of employment and living for persons with disabilities. While the value of attaining higher levels of education may not be entirely quantifiable, we do know that graduates of postsecondary education institutions can expect to earn at least $250,000 to $600,000 more over their lifetime than high school graduates (High Hopes, 1998). We also know that the poverty lev-

els endured by more than one in three disabled Americans (N.O.D. 1998) are unconscionable. Unfortunately, in spite of some relative growth, the N.O.D. (1998) report indicates that, for students with disabilities, access to post secondary education and employment continues to fall substantially below the levels attained by their non disabled peers (Blackorby & Wagner, 1996; Phelps & Hanley-Maxwell, 1997; Wagner & Blackorby, 1996).

With the implementation of a strategic program of research, the National Center for the Study of Postsecondary Educational Supports (NCSPES) at the University of Hawaii at Manoa is focused upon a series of studies which address the discussed issues and barriers through the generation of new knowledge and understanding. The intent is that new findings and understandings will significantly impact upon the successful access, performance and completion of postsecondary education for persons with disabilities, resulting in increased, quality employment and community living.

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The Study of Postsecondary Educational Supports: A Formative Approach to an Emerging Area of Study

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Purpose

The purpose of this document is to introduce the emerging area of study surrounding the provision of educational supports to youth with disabilities in postsecondary programs. A further purpose is to establish a rationale for following a formative approach to the development of a strategic plan of research in this emerging area of study.

Introduction

Leadership within the nation's business and education communities has long pointed to the need for highly educated skilled workers as the nation seeks to succeed in the competitive global economy. Postsecondary education has been described as "America's traditional gateway to the professions, more challenging jobs, and higher wages" (U.S. Department of Education Strategic Plan, 1998-2000).

Over the last twenty years changes in the nation's labor market have increased the importance of possessing a postsecondary education in order to be able to compete in the job market. Whether it is college, adult and continuing education, or technical preparation, postsecondary education plays a major role in preparing persons for employment and career opportunities. Students who continue their education after high school maximize their preparedness for careers in today's changing economy as they learn the higher order thinking and technical skills necessary to take advantage of current and future job market trends. Yet, persons with disabilities have often experienced limited access to and success in postsecondary education programs, resulting in poor employment outcomes.

Statement of the Problem

Given the increasing need for persons with disabilities to be able to succeed in postsecondary education programs in order to be able to access and participate successfully in the work force, it is imperative that we understand present and future needs, emerging strategies, technologies and approaches to enhancing access, participation, and performance for persons with disabilities (Benz, Doren, & Yovanoff, 1998; Blackorby & Wagner, 1996; Gilson, 1996; Reis, Neu, & McGuire, 1997; Stoddard, 1998). Most of the nation's 3,000 postsecondary institutions offer support services to students with disabilities (Binkerhoff, Shaw, & McGuire, 1992; 1993; Bursuck & Rose, 1992;

Pierangelo & Crane, 1997). Such services and supports may vary widely and may include: (1) individual academic accommodations; (2) adaptive equipment; case management and coordination with vocational rehabilitation, independent living, and other community resources; (4) advocacy; and (5) personal counseling, academic and career advising. Although, a wide array of supports and services are being used to accommodate the needs of students with disabilities, understanding which specific accommodations are appropriate and effective to the student and under what conditions they may be applied are unknown. Given that such disability-related services and supports are a relatively new addition to the postsecondary environment, there is a great need to assemble a strategic plan of research focused upon the study of postsecondary supports for students with disability. Currently, insufficient information exists regarding the availability and use of educational supports and how such supports might effect successful access and performance within postsecondary educational and subsequent employment environments. Further, existing information is often piecemeal and unorganized (Gajar, 1998) making it difficult to draw conclusions or to propose policy, procedure, or practice recommendations

During the summer of 1998, the National Institute on Disability and Rehabilitation Research (NIDRR) developed a priority to study educational supports to increase access and improve outcomes for individuals with disabilities in postsecondary education programs. Four areas were identified for study (USDOE, CFDA 84-133B, June 23, 1998):

(1) Identify the nature and range of educational supports that are available to students with disabilities in postsecondary educational programs;

(2) Examine the contributions of technological advances to the effectiveness of student support systems at the postsecondary level;

(3) Investigate the effectiveness of educational supports in terms of educational outcomes and labor force participation; and

(4) Investigate the extent to which institutional supports extend to the employment environment, with a special emphasis on the needs of persons with severe disabilities.

In response to CFDA 84.133B, faculty and staff at the Center on Disability Studies at the University of Hawaii at Manoa conducted a comprehensive review of the literature focused within and across the four areas of study (Stodden, 1998; Stodden & Dowrick, 1998). The literature review further verified the assumption that research to date

was preliminary in nature (Gajar, 1998), consisting of a number of scattered studies focused upon a singular type of support provision with a specific disability group (Brinkerhoff, Shaw, & McGuire, 1993; Tindel, et. al., 1998; Gartin, Rumrill, & Serebreni, 1996; Pfeiffer & Finn, 1997). For Study Areas 1 & 2, (nature and range of educational support provision and contribution of technological advances) the literature consisted of isolated studies and program descriptions, with little effort toward an organized review or synthesis of the information. When seeking to identify the nature and range of educational support provision, the need for an organized and comprehensive database, of national scope, became very apparent, to gain an understanding of the current status of this area of research.

Where researchers found a small number of descriptions of support programs, few studies had been conducted and little or no data was available concerning the effectiveness of such supports with students with disabilities. When reviewing Study Areas 3 and 4 (effectiveness as related to educational outcomes and labor force participation and the carryover of supports into employment settings), no data was available. Federally supported efforts to describe the role of postsecondary career placement services in support of students with disability (OSEP funded Postsecondary Education Demonstration projects) provided little information of an effectiveness and outcome nature.

The transition from secondary school to postsecondary education for students with disabilities has been found to be complex and challenging. The available literature indicates that differences between high school and postsecondary environments are more than cosmetic (Gajar, 1998). Students with disabilities graduating from high school move from a protective environment in which school personnel are legally responsible for identifying and providing appropriate services under the IDEA to an environment in which the students are expected to find and request specific accommodations under Section 504 of the Rehabilitation Act and the Americans with Disabilities Act (ADA). Studies seeking to describe and compare the differences between high school expectations and supports and those found in postsecondary environments are non-existent.

Initial Response to the Problem

Following a comprehensive literature review of educational support provision in postsecondary settings, faculty and staff at the University of Hawaii at Manoa determined the need to initiate a formative, consumer directed

approach to the development of a Strategic Program of Research for this field of study. The formative research process was focused upon obtaining a multidimensional picture of what was known and not known regarding students with disabilities and postsecondary educational programs. The approach involved the following attributes:

(1.) Structured discussions with critical stakeholders, including students with disabilities. Staff conducted a series of community discussion groups to obtain a grass roots perspective of the issues concerning students with disabilities, those who teach and support them, and related agency personnel in postsecondary educational programs.

(2.) Assembled a diverse group of stakeholders and conducted a consumer vision crafting retreat. Rather than focusing only on issues and needs, the retreat sought to describe a "futuristic" and "desired vision" for students with disabilities, support providers, instructors, and other supporting agencies as they work together within an improved postsecondary school experience for students with disabilities for the 21st century.

To bring this vision to reality, researchers and stakeholders concluded that a strategic research program in this field of study must address a broad range of factors that influence the availability and effectiveness of educational supports in postsecondary environments. Grouping these factors into categories, they include: (1) individual person characteristics, (2) family/community/society, (3) rehabilitation system, (4) postsecondary institutional environment, and (5) labor force/workplace. Each of these factors has an impact upon supporting improved access, participation, and performance of students with disabilities in postsecondary educational programs.

Further, participating stakeholders shared the vision of educational support provision as an individualized and flexible process that followed the needs of students with disabilities as they struggled to meet the requirements of postseondary school programs. The role and value of self-determination and self-advocacy skills, as well as supports for active student participation in all aspects of postsecondary education, were deemed significant by participants. As a result of these initial activities, it was apparent that a flexible and formative approach to this emerging field of research was critical to ensure results which would truly impact and improve the access, participation, and performance of students with disabilities in postsecondary educational programs and subsequent employment settings.

Design of Research Activities: Phase I

The purpose of our Phase I Research Plan is to review and characterize the field of

postsecondary educational supports as never before. This characterization of current issues and concerns establishes the platform on which to build intervention and policy research (Phase II), replication and evaluation (Phase III), and concurrent training. Without the successful outcomes of Phase I, intervention research would be premature—essentially shots in the dark. As noted in our premises below, the field is too new and scattered for there to exist accurately comprehensive and current reviews upon which to build an extensive program. The need for a "Phase I" is evident any new national center, emphasized in our case by the recent emergence of postsecondary educational supports as a specific field of study and program development.

The whole program of research, even beyond Phase I, is formative, given the state of the knowledge base (see Stodden & Dowrick, 1998, 1999). The program's focus is highly applied and attends to real problems in settings in which people live their daily lives. The current and proposed research activities derive from our 1998 consumer-based focus groups and continuing review of existing research on postsecondary education supports. The Rehabilitation Research and Training Center (RRTC) is implementing a participatory, sustained research program to enable projections of the future of postsecondary education for people with disabilities in the context of current practices and policies. The research program will provide the basis for improved futures for adults with disabilities in education and the labor market.

Our first premise is:

- *postsecondary students with disabilities, given appropriate accommodations, can achieve challenging educational and work force outcomes comparable to their non-disabled peers.*

The following premises, originally based on our information in 1998, have shaped the Phase I methodologies of our research activities:

- *no comprehensive inventory exists on the nature and range of educational supports used with people with disabilities in postsecondary programs;*
- *further investigation is necessary to determine the extent to which educational supports have been developed and are effective in contributing to positive educational and subsequent workforce outcomes of individuals with disabilities;*
- *numerous individual, societal, family, and system factors contribute to the success of people with disabilities in higher education and subsequent work force settings;*
- *research in the area of educational supports must be planned, developed and implemented from the perspectives of all consumers involved in supporting people with disabilities in postsecondary*

education, including people with disabilities, family members, secondary school educators/counselors, educational support personnel, employers, and rehabilitation personnel;

- *success in the provision of educational supports must be assessed by multiple measures that include the perspective of the recipient of the support services.*

The methodology emphasizes Participatory Action Research (PAR; see accompanying report)—without being bound by it—to maximize consumer involvement without compromising scientific rigor. We have four research goals, corresponding to the RRTC's four Areas of Study as required by the funding agency:

Goal I: a) To identify the *nature* and *range* of educational supports, including (1) individual academic accommodations, (2) adaptive equipment, (3) case management and coordination, (4) advocacy, and (5) personal counseling and career advising, for a) people with disabilities (different types) within postsecondary programs (universities, community colleges, vocational technical programs, and other community based program); and b) to determine what factors influence provision and adoption of these supports.

Goal II: a) To identify *technologies* that improve postsecondary outcomes for students with disabilities; b) to identify factors that impede the provision and the adoption of these technologies; and c) to explore policy and practice solutions to overcoming these barriers.

Goal III: a) To identify *effective* supports and models of support delivery that contribute to improved outcomes for students with disabilities, measured by successful access and performance in postsecondary programs, ability to attain employment, and personal satisfaction; and b) to analyze the factors contributing to the effectiveness of such supports.

Goal IV: To investigate methods by which the supports in postsecondary programs can be extended to the *employment* environment.

The Conceptual Framework (see accompanying report) guiding the strategic program of research for this RRTC is operationalized in three phases of activity as illustrated in the attached Figure 1 and described below.

Phase I: Synthesis and Development - Review of Emerging Research and Design Validation

The purpose of the first phase of activity is to characterize what is known and to identify critical gaps in knowledge and practice. The culmination of this phase is to bring its results to a National Review Forum (see below), and to have that forum recommend adoption and adaptation of the most

important topics for Phases II and III.

There are three *general methodologies* and a total of *six specific* methodologies that contribute to Phase I (and will continue to contribute throughout subsequent phases). These methodologies complement one another by characterizing fresh perspectives on:

(a) the academic knowledge-base and viewpoints of researchers;

(b) institutional practices and viewpoints of student support providers;

(c) special supports and viewpoints of students and graduates.

Brief synopses of the methodologies are listed below. More details, in brief but comprehensive summaries (4-10 pgs), are provided in accompanying reports.

Participatory Action Teams, composed of Consortium and Study Area investigators, people with disabilities, and other consumers, have provided perspectives across all methodologies in the four areas of study. For all methodologies, we have put systems in place that can continue to update this evolving field. Consortium site investigators working with Participatory Action Teams are bringing to the Forum some consensus on potentially useful research-based practices and strategies, critical gaps and issues in proven practice, and other significant variables that may influence further research.

<u>First General Methodology: The Academic Knowledge-Base and Viewpoints of Researchers</u>

This methodology attempts the comprehensive collection and analysis of journal articles, books, videos, manuals, reports, etc. Lists are compiled and information is made available to other researchers. Selectively, reviews are made and positions are taken on the potential of new developments. This methodology contributes to all four areas of study, in proportion to the amount of information available.

- **Extension and Annotation of the Research Database.** The development of reviews and position papers (see below) are necessarily based on a thorough search of literature and investigations of practices, works in progress, and other unpublished information. Comprehensively searching all areas of study, we have built a specialized database (nearly 200 items) of references to articles, books, videos, manuals, reports, etc., and made it available on the world wide web (www.rrtc.hawaii.edu/research/). Our first line of support to other programs is through this web database. We have written annotations to most of these items. Print copies of lists are available.

- **Analyses of Research within Study Areas.** Investigator teams are developing research syntheses (*review papers* and *po-*

sition papers) within and across the four areas of study. This process provides critical information for framing questions for field studies during Phase II of the strategic program of research. Approximately 15 of these analysis papers have been written—some published or submitted for publication, some in draft. As with all the methodology outcomes, summaries are made available to all Forum participants (beforehand) and full papers will be available at the National Review Forum.

Second General Methodology: Institutional Practices, Viewpoints of Student Support Providers

This methodology attempts to develop a comprehensive picture of what is happening nationally. We are interested in regional and cultural differences. We have sought to find who thinks they are doing a good job and who is not. This methodology contributes most substantially to Area I (the nature and scope of supports), with some lesser but useful baseline information in the other three areas.

- **National Survey of Current Practices.** Consortium researchers and PATs have worked with local student services and the Association for Higher Education And Disabilities (AHEAD) to develop and implement a national survey of the current status of educational supports in postsecondary programs. Approximately one third of 2200 surveys were returned, with good distribution across regions and types of program (4 year plus, 2 year, less than 2 year, public and private programs).
- **In-Depth Program Descriptions.** Because of the individuality of supports, often provided only to students who declare their disability status, a national survey will only partly capture the picture of support provision. Therefore, we have begun to examine selected *promising practices*, to be characterized in program descriptions that can serve as models, as well as potentially revealing types of supports for further research.

Third General Methodology: Special Supports and Viewpoints of Students and Graduates

This methodology attempts to bring to light interesting (researchable) facts about specific supports or their circumstances, that would not surface in the more general methods of surveys or program descriptions. It is also a further effort to give voice to the student-consumer. We originally envisioned the PAR approach to provide sufficient consumer input. But we later considered the value of additional interest and validity that could come from individual stories. Thus these processes have been *added* to our program since the original proposal and its acceptance for funding. They add to Areas II, III, and IV, more than to Area I—and most especially to Area III (Effectiveness), in which we have the least information from the other methodologies.

- **Individual Case Reports.** We originally planned to use the recognized Promising Programs to identify some individuals

within those programs for case studies. Because these programs are better recognized in the context of the National Survey, our search for them was delayed until the survey began returning its results. Therefore, we decided to identify and write up *retrospective* case reports, with the students being written about having significant say in the article. The protocol and examples are posted on our website, partly to encourage others outside the RRTC to contribute further reports. Six reports (maybe more, new ones are arriving every week), have been summarized for the Forum.

- **Focus Groups.** Another addition, beyond the original proposal, to the types of research that give consumers' perspectives, has been student-oriented focus groups. At first we planned four, one at each of the Consortium sites. Then we were given impetus to add six geographically diverse sites, as part of an initiative by the Presidential Task Force on the Employment of Adults with Disabilities. Groups have been designed to give additional voice to underrepresented disability and ethnic participants. The data add further grist to the mill of future policy, finance, and utilization studies.

National Design Forum

The culmination of these efforts was scheduled to take place in March 2000, at our National Review Forum—for which this document is part of the preparatory papers. More than 20 experts and consumers have accepted the invitation to participate for 2 days in the review of Phase 1 findings and to assist the reconsideration of projected study areas to be pursued in subsequent years. The purpose of the Forum will be to review the overall synthesis and all its components, validate the influence of contributing factors, and identify critical topics within and across the four areas of study.

Forum participants will also provide input into Dissemination (e.g., formats and audiences for a series of research-to-practice briefs), the most important content for Training, and recommended methods of Technical Assistance, etc.

Phase II: Implementation of a Strategic Research Plan

In Years 2-5, we will conduct a series of studies in *Intervention, Demonstration, Policy Analysis,* etc. in Study Areas II, III, and IV. At the Forum, the topics of projected studies will be reconsidered, as indicated above. The design of all studies will be reconsidered after the Forum by the Consortium researchers, in the light of all information and Forum activities.

Examples of the types of probable studies based on 1998 knowledge are described in the original proposal. For example, we proposed sample studies of how the role or voice of the "person" can be enhanced by the use of various

technologies; if and how technological support carries over from postsecondary education to the workplace; and ethnographic approaches to the effectiveness of supports. Thus the research teams will work closely together, sometimes to combine Areas of Study, and sometimes to collaborate across the nation. While the University of Hawaii takes the main responsibility, some of the studies will be led by a Consortium member team - for example, the Virginia team might lead an investigation of comprehensive career planning and employment outcomes, because of their experience in this area.

Phase III: Continued Implementation and Evaluation

During Years 4 and 5, interventions that have shown educational support value or effectiveness could be replicated in other postsecondary settings. Consortium member programs and Collaborating Research Programs would serve as sites for replication of effective interventions. Several collaborating programs have been identified because of special cultural or geographic conditions. Data from the longitudinal nation survey and replication of interventions would ensure the generalizability of effectiveness across different contexts and postsecondary program types. During Years 4 and 5 of the RRTC, attention is expected to be focused upon analysis of longitudinal data measuring the ongoing impact of educational support provision and the relationship of that impact to subsequent participation in the work force (see potential studies outlined in the original proposal).

An important part of the strategic plan of research during Years 3-5 is an evaluation of research findings generated over the first years of the RRTC. This analysis will seek to determine the value of one set of data set in relation to others, which might give new insight into the findings.

Maintaining Rigor In Participatory Action Research

The RRTC is conceptually designed to be consumer-driven and therefore, research activities are conducted within a participatory action research (PAR) framework that maximizes the participation of consumers. PAR has been increasingly used to give voice to marginalized peoples since its early demonstration with minority communities by Lewin (1946). The primary goals are to increase the relevance of research through consumer involvement and to empower individuals to construct and use knowledge to enhance their own lives (Whyte, 1991). The use of PAR provides for a coherent and sustained approach that guides all RRTC research activities. The benefits of this approach, as opposed to researcher-driven

approaches (based on Bruyere, 1993; NIDRR, 1997: White Nary. T Froehlich in press) include:

- increased relevance and validity of research due to greater consumer involvement in identifying and prioritizing research questions and constructs;
- more efficient sample recruitment process because potential subjects perceive personal relevance and benefit;
- increased acceptance and use of the research product by consumers because of greater relevance to their self-identified needs;
- more positive impacts on the service system because PAR's "action" orientation fosters the immediate practical application of research results (rather than simply presenting the results for others to figure out how they might be applied);
- enhanced generation of new research ideas and alternative interpretations of results through consumer input based on personal ground-level experience; and
- greater scope and reach of dissemination as consumers inform each other of research results and products, which they have helped to produce.

All RRTC research activities employ the PAR approach, building upon past experiences of Center on Disability Studies staff and backed by published guidelines (e.g., NIDRR, 1997; Whyte, 1991). PAR supports qualitative research, since the personal experiences of properly qualified and trained consumers may give them an advantage over non-consumers in performing such research tasks as developing valid and relevant interview questions, conducting interviews, and coding interview responses. PAR is also applicable to quantitative research, since consumers can make important contributions to defining the research problem, identifying relevant variables to manipulate or control, interpreting the data collected, and disseminating research products (Lane & Mann, summarized in NDRR, 1997).

The PAR provides *coherence* to the research activities, contributing equally to the knowledge-base synthesis, the survey, program descriptions, and case studies, which in turn lead to experiments, demonstrations, and policy studies. Our RRTC project has also adopted the PAR process and principles in support of training, technical assistance, and dissemination activities. Thus we have established Participating Action Teams (Pats) to provide input on all project activities at each project site. Also PAT members are involved in research activities as well as training, TA and dissemination activities of the project.

This paper presents and discusses a model for participating action research and relates it to a case illustration at a series of focus groups that

were conducted by our RRTC project. Participants in the focus groups were students with disabilities. They were involved in all phases of the research. The focus group participants worked with researchers in choosing focus groups as an appropriate method for the goals and objectives they helped design. The questions for each site. This ensured that the questions would address their concerns and would be meaningful to the community. Participant review was used during the analysis process to assist researches to interpret qualitative data that was generated by the focus group discussion. Finally, focus group participants will help inform the dissemination and application of the study's findings in both continuing research and practice.

A Model for Participatory Action Research

The research process is influenced by both external and internal consumer involvements. Specifically, this PAR model is composed of four main components: 1) external consumer influences, 2) internal consumer influences through the Pats, 3) the research process, and 4) consumer-valued outcomes. Each of these components is presented in more detail below.

External Consumer Influence

The influence of consumers' needs is often substantial even before a related research project is begun. There has been a trend among policy makers and research funders, such as the National Institute on Disability and Rehabilitation Research (NIDRR), to develop PAR priorities.

Policy Makers

Policy makers are often petitioned by special interest groups and individuals regarding hundreds of issues. The issues often represent ideas that may not even be on the policy maker's "radar screen". One consumer activist group, ADAPT (American disabled for Attendant Programs Today) has used tactics to make their calls for change in policy widely publicized. ADAPT's campaign for accessible public transit began in Denver in 1983 and spawned 7 years of demonstrations in cities across the U.S.. At those demonstrations wheelchair users blocked buses by chaining their wheelchairs to them. As a result, ADAPT was in a position to influence stringent requirements regarding public transit in the legislation of the Americans with Disabilities Act 1990.

Research Funders

Funding agencies often solicit input when establishing research initiatives. Frequently the feedback generated comes from professionals who wish to conduct research in the area. NIDRR is one such agency. Their consumer approach has three components. First, they invite knowledgeable consumers,

advocates, and family members to help identify real-world problems that need to be addressed through research. Second, in *The Federal Register* , they release "calls for public comment" on research priorities that they will incorporate in future grant competitions. Third, NIDRR involves people with disabilities and those from minority cultures on its peer view panels for various grant competitions.

Consumer Empowered Team

What White (1995) refers to is Participatory Action Team equivalent to our PAT. It consists of consumer-consultants, advocate leaders, project and disability agency personnel and researchers. The team is much closer to research activities than the usual consumer advisory board. Its purpose is to solicit consumer input throughout the research process. Consultations may range from interviewing key informants regarding policy issues, to developing contracts with subject matter experts to assist in producing specific research or training materials. Each project assembles its own team based on the particular project needs, goals, and intended outcomes.

Team members frame the research issue from a consumer viewpoint, identify possible root causes of why the problem occurs, under what conditions, and with what consequences. Fawcett (1991) suggest this PAR process enhances the quality of the research process through assessing the social significance of the research *goals;* the appropriateness of the research *procedures*; and the social importance of the *effects* of the intervention.

Now in the Hawaii RRTC, PATs have been established program-wide as well as for each individual research enterprise – survey, focus groups, and so on.

The Research Process

The process starts with formulating the research question. To answer this question, the research goals are developed, as are the procedures and methods. The generated data are then analyzed to identify the results. Finally, the results and intervention package, as applicable, are disseminated to targeted audiences. Each of these research elements and how they are influenced through this iterative participatory research process are discussed in more detail below.

Formulate Research Questions

The team reviews and helps shape the research question within the priorities identified by the funding agency. This participation helps ensure that the research will be more relevant to its intended audiences. For example, in the RRTC focus group activity consumers are involved in both generating initial research questions and in

applying these research questions to the needs and conditions in each of the ten national sites.

Prioritize Concerns and Develop Goals

Within the direction of the research, the consumers' disability concerns are to be prioritized and goals developed to address those concerns. The team shapes the relevance of the concerns and goals, based on their personal experiences. To provide direction for our research, we used input from consumers and professionals to identify critical topic areas.

Shape Procedures and Methods

Researchers adopt specific approaches to address research questions or problems. We desire to develop research interventions and outcomes, which can survive in the natural community setting over time. The approach teaches us valuable lessons about the delicate balance between research rigor and relevance. Rigorous research builds better science when it is relevant to those to whom it is directed. (Rogers & Palmer-Erbs, 1994).

For example, in the Focus groups, rather than be confined to a standard set of questions for all ten sites, we incorporated PAR methods to generate variations in questions relevant to each site.

Results

Traditional research results describe the effects of independent variables on targeted dependent variables and how this evidence contributes to existing knowledge. The main emphasis is whether the results demonstrate a functional relationship between the independent and dependent variables. In the PAR approach, the team augments the scientific interpretation of the results by challenging researchers to examine the practical meaning and impact the results can have for whom the intervention was targeted. Consumer-collaborators have little enthusiasm for research results that produce significant statistical effects, but have virtually no real-life application. Greenwood et al. (1993 state that this involvement in the research process is "capable of producing both scientifically and socially meaningful research results" (p. 180). To this end each RRTC focus group site involves the consumer participants by sending them the preliminary results for their review and comments.

Dissemination

Consumer collaboration in the dissemination process can shape the products that flow from the research as well as the best formats (e.g., audiotape, Braille, large print, www, etc.) to promote maximum use by intended users. Consumer collaborators who are partners in the research process can be valuable champions in approaching new target audiences for the particular intervention or resulting research products. RRTC consumers involved in the focus groups have provided invaluable sug-

gestions in getting this information out to broader audiences. In addition, the PATs are involved in developing dissemination plans and in some cases the development of the research products.

Consumer Participation

Consumers can also provide realistic input regarding products through their perspective of the social importance of the outcomes, the ease of implementation, and whether outcomes improve some aspect of the consumers' quality of life. Each of these values is briefly discussed.

Social Importance

Wolf (1978) and Fawcett (1991) have described the importance of consumer "social validation" of research goals and procedures. These authors further suggest that consumer input is also relevant in determining the social importance of the effects of the research intervention and how relevant it is to their lives.

Ease of Implementation

Consumers can provide a perspective that researchers, who are "on the outside" do not have about developing interventions that can be easily implemented by consumers. After the research phase has been conducted, emphasis should be placed on technology transfer from the researcher to the consumer (Brandt & Pope, 1997).

Quality of Life

Quality of life is an important issue to consumers who are evaluating research interventions and proposed products. Consumers input is needed throughout the research process to increase the likelihood that research outcomes enhance consumers' quality of life.

Note:

Selected excerpts of the description of the PAR/PAT process are from a paper titled Consumers as Collaborators in Research and Action written by G.W. White, D.E. Nary and A.K. Froehlich from the Research and Training Center in Independent Living and the Department of Human Development and Family Life at the University of Kansas. The primary author is a member of the National Advisory Board of our National Center on Post Secondary Supports and Services.

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Stodden, R.A., & Dowrick, P.W. (1998). National Center for the Study of Postsecondary Educational Supports. Proposal submitted to National Institute on Disabilty Rehabilitation and Research, Washington, DC.

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Izzo
Discussion Questions

1. Do students with disabilities need to be more self-determined than students without disabilities?

2. What does it mean to "accept" ones disability?

3. What is the definition of "internal locus of control" versus "external locus of control"? How do these terms fit in with the discussion of the lives of people with disabilities?

4. Is there a critical period in an individual's life for the development of an internal locus of control? How can we foster this locus of control during this critical period (s)?

The Development of Self-Determination and Self-Advocacy Skills: Essential Keys for Students with Disabilities

Margo Izzo, Ph.D.
and
Peg Lamb

For a student with a disability, I think that one of the most important things you have to be able to do is accept yourself and your disability because if you can't do that, then how do you expect to go to a professor and say "I need this, this, and this?" How do you expect them to accept that if you can't accept yourself?

College student with a disability, 5-23-01

The vision of many parents, professionals and students with disabilities is that students with disabilities will become full participating members of their communities who are engaged in meaningful employment, life-long learning and independent living. The vision of the National Center for Secondary Education and Transition (NCSET) and the National Center for the Study of Postsecondary Educational Supports (NCSPES) reflects this vision by stating that they are promoting full participation in meaningful postsecondary education, life-long learning, employment and independent living. Even the Individuals with Disabilities Education Act of 1997 states that "children with disabilities should be … living a full life, raising families, being part of their community" (PL 105-17).

Yet, how do educators assist students with disabilities, their parents, and their communities to realize these visions? In several Capacity Building Institutes conducted by NCSET in February and March of 2001, professionals, parents and consumers discussed four significant issues that need to be addressed to improve post-school outcomes for students with disabilities: 1) The "preparation for adult life phase" received by students with disabilities in lower education under IDEA; 2) Educational supports available to students with disabilities in postsecondary education; 3) Coordination of educational supports with related service personnel; 4) Transition or transfer of educational supports to subsequent employment settings.

These same stakeholders identified needs across these four significant issues that must be addressed at every level of student participation, including secondary education, postsecondary education and employment. The issue that was addressed most frequently across settings was the need to support student empowerment, self-advocacy, and self-determination. Students with disabilities need to be empowered to act as causal agents towards their own future – that is, they need to be self-determined and have an internal locus

of control. If students do not have the opportunity to learn how to make their own choices during the middle and high school experience, then they are at-risk for not achieving positive post-school outcomes (Wehmeyer & Schwartz, 1995).

Nature of the Problem

According to the Association of Higher Education and Disability students with disabilities are enrolling in postsecondary education in increasing numbers from 2.6% in 1978, to 9.4% in 1995, to nearly 19% in 1996, primarily in community colleges. In spite of the increased access to higher education they have met with limited success in community college programs (Stodden, 2000). One major issue contributing to students with disabilities difficulty in the college setting is the dramatic difference in the laws that govern their educational support. In a secondary school setting, special education teachers and paraprofessionals are mandated by IDEA of 1997 to provide and coordinate specially designed instruction and accommodations in both general and special education classes. Thus, students with disabilities transition from high school to college with limited skills in self-determination, self-advocacy, and locus of control because their high school service providers and parents have all too often taken the responsibility to negotiate and advocate for their academic and social needs.

In college, students with disabilities are expected to take full responsibility for their learning and to request the accommodations that they need for success. The American with Disabilities Act (1994) only mandates access to higher education, not a vast array of support personnel to meet students' needs. The college student with disabilities must request accommodations, a process with which many students with disabilities report that they are not comfortable (Izzo, Hertzfeld & Aaron, in press). Often times the student must request accommodations and advocate with faculty who do not understand the nature of specific disabilities, nor common accommodations that are appropriate. Yet many students with disabilities do not understand their strengths and limitations well enough to explain how certain compensation strategies will "equal the playing field" but will not grant an "unfair advantage" (Gordon & Keiser, 1998). After conducting focus groups involving 52 college students and 24 faculty, Izzo, Hertzfeld & Aaron (in press) have concluded that students who approach faculty early in the year with an open and honest discussion about how to accommodate their disability have a positive learning experience.

A faculty member reported —

"I think that it is primarily a students' issue. We would love to help. We are willing to cooperate, listen and help. To me it makes a big difference when they come to you at the beginning of the quarter and they are registered with ODS. In general, students need to be able to approach you. They also need to be an advocate for themselves"(Faculty Member, 2000).

The necessity for persons with disabilities to be self-determined and therefore self-actualizing is even more critical in the world of work. According to Wehman, Brooke, and Inge (2001), one of the major barriers that must be considered in the area of unemployment for people with disabilities is their lifelong inexperience of gaining control over the major events of their lives. The culture of America is strongly rooted in the individual's ability to exercise power, control, and influence within their community. Yet, people with disabilities throughout their educational experience and into their adult life, are consistently limited or denied the opportunity to take risks, make decision, and therefore experience these highly prized values. Given that only 29% of person with disabilities, ages 18-64 are employed (NOD, 1998), it is not unreasonable to assume that the lack of self-determination skills contribute to these poor employment outcomes .

Wehmeyer (1998) has written extensively about the need for people with disabilities to become more autonomous and to learn how to make choices and advocate for their wishes and needs. Stodden (2000) writes that self-determination/self-advocacy or the ability to articulate one's needs and make informed decisions about the supports necessary to meet those needs is a critical skill required of students with disabilities in postsecondary education. Although national experts, local service providers, faculty and students agree that self-determination and locus of control are critical skills needed for post-school success, lack of self-determination skills continues to be identified as a major barrier to achieving positive post-school outcomes.

What is Self-Determination and Locus of Control?

Self-Determination

Self-determination is a combination of skills, knowledge and beliefs that enables a person to engage in goal-directed self-regulated behavior (Field, Martin, Miller, Ward, & Wehmeyer, 1998). Self-determined people know what they want and use their self-advocacy skills to get it. From an awareness of personal needs, self-determined individuals choose goals, then doggedly

pursue them. This involves asserting their presence, making their needs known, evaluating progress toward meeting their goals, adjusting their performance, and creating unique approaches to solve problems (Martin, Huber Marshall, & Maxson,1993). According to Wehmeyer and Schwartz (1995) students who obtain self -determination skills while attending school have a greater chance for success than students who do not acquire these skills.

Self–determination skills consist of seven components: self–awareness, self–advocacy, self-efficacy, decision-making, independent performance, self -evaluation and adjustment (Martin and Huber Marshall, 1995). These terms are defined as follows:

- Self-awareness begins with the ability to identify and understand needs, interests, strengths, limitations and values.
- Self-advocacy refers to the ability to assertively state wants, needs and rights, determine and pursue needed supports, and conduct your own affairs.
- Self-efficacy often is referred to as self-confidence – the belief that you expect to obtain your goal.
- Decision-making is the complex skill of setting goals and standards, identifying information to make decisions and considering past solutions, generating new solutions if needed, and choosing the best option to develop a plan.
- Independent performance refers to the ability to initiate and complete tasks by using self-management strategies.
- Self-evaluation includes monitoring task performance and determining if the plan has been completed and the goal met.
- Adjustment – the process of changing goals, standards and plans to improve performance so that the person ultimately develops a better understanding to their needs, strengths and limitations. Thus, the self-determination process continues to cycle through a self-improvement process.

Locus of Control

Rotter (1966) defined locus of control as a belief of behavior-reinforcement contingencies that are likely to influence the actions a person chooses to take. Locus of control or the place of control, has to do with where one places the responsibility for their actions and the results of their actions. When one operates with more of an external locus of control, they feel limited control over what happens to them and that outside sources are responsible for the events they experience. They do not see themselves as causal agents, but passive recipients in the events of their lives. Operating with more of an internal locus of control, an individual feels that they have some control over what happens to them and they can readily

see the role they play and the responsibility they have in what happens to them. Obviously, the development of an internal sense of locus of control is critical to setting and achieving one's personal goals.

Persons who fail to develop an internal and external locus of control lack a sense of self-determination. They are less able to learn about themselves from their own experiences and have less of a sense of their own worth (Lefcourt, 1982). The positive relationship between access to opportunity and locus of control indicates that as people have the opportunity to choose, make decisions and act on their environment, they develop a more internal locus of control (Lefcourt, 1982). Halpern (1996) believes that students must have many opportunities to experience success on many levels, and over time, to enhance their internal locus of control. Students with disabilities may not learn to self-advocate or self-determine because parents and teachers are constantly controlling their environment to such an extent that students themselves do not have the opportunity to choose and act independently (Yuen, in press).

Relationship Between Self-Determination, Locus of Control, and Self-Advocacy

Although each component of self-determination and locus of control are essential for lifelong success, self-advocacy is a critical skill for persons with disabilities who find themselves working with others who may not have had the opportunity to learn about disabilities and accommodations. Most general education teachers and employers are not familiar with specific disabilities nor common accommodations. It may become the responsibility of persons with disabilities to discuss strengths, limitations and needed accommodations and supports. Being able to disclose a disability and present oneself in a positive light enhances students' self-esteem. Self-determined students approach sharing their personal experiences and educating others with a greater degree of self-assurance. Students need to be in charge of creating the perception of their strengths, limitations and needs when they enter postsecondary settings. These experiences enhance students' ability to meet career and life goals. When students with disabilities enter classroom settings where teachers are not familiar with certain accommodations, then students need to provide an overview of why certain accommodations, modifications and teaching methods enhance the teaching-learning process.

How Do We Teach Self-Determination and Locus of Control?

Clearly, the skills of self-determination, self-advocacy and a sense of locus of control must be developed and nurtured from middle school through high school with extensive guided practice during the junior and senior year by educators and parents. The questions that arise are:

- How can we restructure high schools to develop and guide students in practicing their skills in self-determination and self-advocacy, and develop a stronger sense of internal locus of control?
- How can we, as educators, work in partnership with parents to reinforce these skills in school and at home?

Rethink the Role of the Secondary Special Educator

A first step in responding to these two questions is for special educators, particularly at the secondary level, to rethink their role in working with students with disabilities. Traditionally, secondary special educators think of their role as teaching and supporting students to gain the credits needed to graduate from high school. Their daily efforts are spent teaching and/or assisting general education teachers in modifying curriculum, creating alternative assessments, and lobbying them to renegotiate assignments so students with disabilities can earn credit towards their diploma.

These same types of interactions are also prevalent in high school special education classes. While these maximum efforts by the educational staff may well assist students with disabilities in attaining their high school diploma, they do little to prepare them to become independent, responsible young adults. Other special educators take a "tough love" approach with high school students with disabilities and will inform students that they have 8 out of 10 missing assignments in a required course and that they better "get with it, if they want to graduate".

Parents of high school students often vacillate between these two extreme approaches. They will either spend hours doing their student's assignment telling them what to write, solving the math problems, etc. or pronouncing that if "they don't get their grades up they will not be able to use the car or leave the house." In these scenarios educational staff and parents are expending more effort and concern about graduation from high school than the student is spending. Neither of these polar opposite approaches is effective in developing students with disabilities to become self-actualizing young adults, prepared to plan and implement their goals for their future.

Instead, secondary special educators and parents must shift their efforts from supporting stu-

dents to graduate from high school to preparing students for life as independent young adults. Thus, in their daily interactions with their high school students on major issues they need to consider whether their discourse and actions support students towards independence and self-determination or enable them to continue dependency and learned helplessness. The role of special educators and parents might be envisioned as one of developing students' "roots" of strong academic skills and strengthening their "wings" of self-determination so they will be strong enough to take independent flight in the adult world.

Revisit the IEP to Determine if It Leads to the Exit Goals Students Need

A second step in restructuring high schools to develop and guide students in practicing their self-determination skills is for middle school and high school departments of special education to revisit the IEP exit outcomes established for students with disabilities. They must consider whether the existing exit goals lead to the development of self-determination skills essential for success in postsecondary education and adult life. A list of essential exit outcomes for students with disabilities at their graduation would include:

- Plan and conduct their IEP conference.
- Articulate in oral and written form their personal and academic strengths, challenges, needs, and preferences.
- Set goals and develop an action plan.
- Identify the resources they need to meet their goals and how to access them.
- Assess their progress and adjust their goals and plans.
- Problem solve and resolve conflict.
- Advocate for themselves in school and the workplace.
- Develop a career/employment plan based on their interests, aptitudes, and abilities.
- Operate as independently as possible.
- Believe they can achieve their goals and persist with these goals.

Credit-Bearing Class On Self-Determination

One strategy that educators have implemented in Michigan is to create a class whose purpose is to teach self-determination skills needed to navigate high school, college and employment. There are four critical goals of a self-determination class in high school:

1. Nurture students' independence and strengthen their voice by including them as an active participant in their Individualized Education Plan (IEP) with the intent of having them ultimately plan and conduct their own meeting.
2. Develop opportunities for students to learn about the nature of their disability their learning strengths and challenges and the supports that are necessary for their suc-

cess in school and the workplace.

3. Strengthen students' sense of internal locus of control so that they begin to see themselves as causal or active agents in the outcomes of events and experiences, rather than passive recipients of the actions of others.

4. Promote the development of students' self-advocacy skills by expecting them to know and ask for what they need in an appropriate manner.

Ideally, in secondary schools these skills are best developed in a class on Self-Determination in which a safe and supportive learning community can be developed to examine these four elements and engage students with disabilities in group and individual activities which will develop and strengthen these abilities with the support and guidance of special educators and school social workers and counselors. However, these elements can be incorporated into the activities of resource rooms, developed on an individual basis through strategic interactions between teacher consultants and students with disabilities, and/or infused into general education classrooms. The development of the skills of students with disabilities in self-determination will be greatly enhanced if both educators and parents develop them in partnership. District sponsored workshops for parents on transition and self-determination is one way to encourage these types of partnerships.

Experiences Teachers Can Provide to Nurture Self-Determination Skills

Self-Directed IEP Meetings

In order to maximize the achievement of the exit goal of students with disabilities planning and conducting their IEP, they need to start attending and participating in them in an age-appropriate way by late elementary school. At the very least this might be attending the IEP and sharing with the committee how school is going for them, what is going well, what difficulties they are having and what supports they think would be helpful. In the next stages, students might suggest people to attend the meeting, develop one or two goals they want to achieve and the steps needed to achieve these goals, and share them with the committee. By high school, students with disabilities should have input into the date and time of the meeting and the members of the committee, for example which classroom teachers they would like to attend. They should play a major role in determining their class schedule and be an active participant in writing the goals and objectives for their IEP and transition plans. Throughout their four years of high school they should gradually take more responsibility to lead the discussion on their academic and social progress to date in high

school and what supports they need to succeed. The role of the committee members is to listen to the student and ask guiding questions that facilitate their independence, responsibility, and accountability for their plans.

Promoting Disability Awareness

In order for students with disabilities to eventually lead their IEP they need to learn about their disability, their strengths, their challenges, and the accommodations and supports necessary for their success. There are several steps in developing this awareness. High school students with disabilities need to review their psychological reports and testing results with the school psychologist and special educator so that they can gain an understanding of their strengths and challenges in the learning process. Next, they need to review their IEP papers in order to understand how this document is intended to identify a plan of support services to address their needs. Traditionally, students are tested without ever knowing the results, which perpetuates a chronic state of anxiety and confusion about their performance and capabilities. Additional activities, such as reading age appropriate books or articles about the nature of their disability or about well-known people with disabilities and their successes and challenges can be enlightening. Participating in panel discussions with teachers, community members, and former students with disabilities helps students with disabilities to realize that many people have the same challenges in learning as they have. These interactions with others who have disabilities can help them gain more understanding and acceptance about the ways in which they learn and provide them with a sense of optimism for their future.

Nurturing Internal Locus of Control

The development of students' sense of internal and external locus of control can begin with a class or individual discussion about these terms and their definition. The development of a sense of locus of control begins at a young age. Internal locus of control is developed more readily in environments in which children are safe to explore. They are given the opportunity to make choices that are age appropriate, experience the outcomes of their choices, and held accountable for the choices they make. External locus of control develops in environments where children are limited in their ability to explore their world because of over controlling and anxious environments. They are given limited opportunities to make choices of any kind, experience the outcomes of their choices, and often not held accountable for their actions and choices they do make.

Teachers can begin to nurture an internal sense of locus of control in a classroom setting by asking students to reflect on the classroom behav-

iors of successful and unsuccessful students and teachers. Point out that a successful classroom environment comes from the dynamic interaction between teacher and students. The more that both the teacher and students behave in ways that promote a positive, supportive classroom atmosphere with mutual respect, and take personal responsibility for academic work, the more likely both teachers and students will feel satisfied with the learning outcomes of the class. Students can gain greater understanding of the concepts of internal and external locus of control through activities such as reading scenarios of people's events and interactions and deciding which type of locus of control is evident in the scenario. They can develop their own vignette and role-play different types of locus of control and ask classmates to decide the type of locus of control. In scenes depicting external locus of control, students can discuss how the characters might change the scene to depict a more internal construct of locus of control.

Taking a more personal approach to examining locus of control, students can keep a log of two or three daily interactions or events for a week and analyze their locus of control in these personal situations. Watching a movie or television show and analyzing the main character's behavior for types of locus of control can help students begin to understand and construct a stronger sense of internal locus of control. Teachers can have discussions with parents about their students' experiences in making choices and their ability to be accountable for the choices they make. Including students in these conversations may prove very beneficial in strengthening the communication between parent, student, and teacher and foster the development of an internal sense locus of control leading to more student responsibility.

The process of transferring the responsibility for success in high school more to the student may well mean that a student with a disability will make the choice to fail a required class. As students are coached by special educators and parents to take more responsibility for their high school academic success, they may fall short of their goal and have to repeat a class. Failing a class can serve as an important experience in developing one's internal sense of locus of control, if the student with the support of the special educator and parent, reflects on their goal and actions to determine what worked, what didn't, and what adjustments are necessary to reach their goal on the second attempt. This process of allowing students with disabilities to experience the conse-

quences of their actions can be a very uncomfortable experience, especially for students who have been overprotected in school and at home, if high school is the first time they encounter the consequences of the choices they make. However, the more they are buffeted from experiencing the outcomes of their actions in high school, the more difficult their postsecondary educational experience will be when they have minimum supports and maximum responsibility.

Developing Self-Advocacy Skills

It is not only necessary to help students with disabilities find their voice, i.e., develop an awareness of their disability and the ways in which they learn, but also to provide them with the opportunities to use their voice by teaching them to self-advocate with their teachers in high school. Having a conversation with a teacher about the difficulties encountered in learning can create anxiety for many students with disabilities. Thus, several steps are necessary to prepare them for this conversation. A first step is for the student to write a personal self-advocacy plan describing their disability, their strengths and challenges as a student, the type of teaching style or classroom activities they find helpful, and the accommodations including assistive technologies that are necessary for them to be successful. They also need to include a paragraph on their responsibility as a student. Through the process of writing a self-advocacy plan a student is required to think about his/her needs as a learner, as well as the responsibility he/she must take to be successful. In addition, a written plan provides the student with a script for the conversation with a teacher.

Students with disabilities will need several types of practice in sharing their plans before they make an appointment with their classroom teacher. It is also important to discuss with students with disabilities that there are several ways to advocate. One can take a passive or soft-spoken, timid approach or a loud, demanding aggressive approach. Neither of these is very effective in achieving their goal of a communicating their needs as a learner to their teachers. The most effective method of advocacy is an assertive one, i.e., stating your needs in a strong but pleasant tone (Rumrill, Palmer, Roessler, & Brown, 1999). Students can begin practicing their self-advocacy by sharing their written plan with a peer, then a small group of peers, and then their parent and special education teacher. These alternatives give them several opportunities to become comfortable with the process. If they have several teachers to meet with and share their self-advocacy plan, it is helpful if they select the teacher with whom they

feel most comfortable. In some instances, students with disabilities are so anxious about taking the first step that the special education teacher may need to attend their first appointment for support and guidance.

Infusing Self-Determination Skills into the General Curricula

While many of the activities described in the above paragraphs may be more suited to implement in a class designed to teach self-determination skills or a resource room, there are also ways to integrate the development of these skills in general education classrooms.

Teaching self-determination to all students through inclusive classrooms has been successfully accomplished in over 20 school districts across three states. Creating opportunities for students to choose writing topics and specific goals to complete became a strategy that teachers infused into their instructional plans. Through a federal demonstration grant, 20 inclusive teams piloted a self-determination and transition curricula called NEXT S.T.E.P. The NEXT S.T.E.P. curriculum has been designed to help students make their transitions from school to adult life more successful. This curriculum helps students learn how to take charge of their own transition planning process. As students progress through the curriculum they:

- learn about the nature and purpose of transition planning
- participate in self-exploration and self-evaluation activities
- develop and implement their own transition plans
- present their transition plans to others in an individualized transition planning meeting.

The NEXT S.T.E.P. curriculum has been infused into semester classes that delivers content related to transition (e.g. career class, information technology classes, applied sciences classes) or a traditional class such as English or Social Studies where NEXT STEP lessons are presented about twice a week and students complete assignments related to transition (e.g. giving a writing assignment about careers and/or selecting a college). Two English teachers commented:

We had students write a five paragraph paper in which they described the goals they developed in NEXT S.T.E.P. and how they were going to complete their goals. This assignment was incorporated as one of our assignments for English. (General Education Teacher, English Class)

We really tried to tie the content of NEXT S.T.E.P. with the content we were doing in our English class. Lesson 4 of the curriculum sug-

gests students write a paragraph about their hopes and dreams and how their hopes and dreams influence their future plans. We used this writing activity to satisfy one of our English assignments." (Special Education teacher, English class)

The final activity that many teachers required students to complete was to summarize their vision for the future, strengths, challenges, and actual plans to reach their vision through a powerpoint presentation. These presentations were presented to their peers and/or presented at their IEP meeting. Many youth disclosed that their disability was a challenge and outlined strategies to compensate for their learning differences. Since we all have strengths and challenges, all students outlined their personal plans regardless of whether they had a disability or not. Many of the students shared their goals that they accomplished during the current year as well as their plans for the upcoming school year. Through the development and accomplishment of their personal self-selected goals, these students demonstrated that they can reach their goals with careful planning and support from their teachers, peers and parents.

Summary

As educators, we must restructure our role to assure that the skills students need to succeed in their chosen post-school environments are indeed highlighted in their IEP, and then taught through both the general education curricula and special education supports. Students' educational program must include content on disability awareness, locus of control, self-determination and self-advocacy skills. To the extent possible, students themselves need to coordinate the accommodations they will need in post-school settings such as college, employment and independent living.

In the final analysis, the real test of the value and necessity of fostering self-determination is when professionals and parents take time to hear the voices of young adults with disabilities who have acquired self-determination and self-advocacy skills and a more internal sense of locus of control. Two high school students were part of an experimental self-determination class wrote in their final reflective journals and quoted in (Holub, Lamb, and Bang, 1998):

I would never choose the weaknesses that I have, but without them I would not have the strengths that I have. Learning disabilities are with me for life. By acknowledging them an d accessing the help others offer, I don't have to suffer by the title I have branded myself...."stupid." I can begin to trust that I am as talented as others. (Student One)

As a student, I learned more about my disability personally, and I [now] understand more about how it is affecting my grades and my attitude. When I am aware of a disability, I become frustrated. But this class has helped me be more relaxed and comfortable. My grades over the last three years have continued to rise up the scale.

When I look at my report card, I feel proud of what I have accomplished. (Student Two)

In sum, by listening to the voices of youth with disabilities, rethinking our roles as professionals and parents, and by providing them with opportunities to develop the skills of self-determination and exercise their rights to choose throughout their educational process, youth with disabilities will have the essential keys to open the door to postsecondary success.

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Burgstahler
Discussion Questions

1. Who should be responsible for funding what kinds of technology for individuals with disabilities at school, during transition to work, on the job, and at home?

2. Who should be involved in the assessment, selection and purchase of technology for students and employees with disabilities?

3. How can we assure that appropriate technology is available when and where people with disabilities need it?

4. How can we assure that distance learning program providers employ universal design principles to make courses accessible to a wide variety of potential students?

Roles of Technology in Preparing Youth with Disabilities for Postsecondary Education and Employment

Sheryl Burgstahler, Ph.D.

Individuals with disabilities experience far less career success than their non-disabled peers (Benz, Doren, & Yovanoff, 1998; Gilson, 1996; McNeil, 1997; National Organization on Disability, 1998). However, these differences in achievement diminish between individuals with more education. For example, only 15.6% of persons with disabilities with less than a high school diploma participate in today's labor force; 30.2% of those who complete high school; 45.1% of those with some postsecondary education, and 50.3% of those with at least four years of college (DeLoach, 1992; Yelin & Katz, 1994a, 1994b). Individuals with disabilities are significantly underrepresented in postsecondary education and significantly fewer students with disabilities eventually earn bachelors degrees than students without disabilities (Blackorby & Wagner, 1996; Horn & Berktold, 1999; Stodden & Dowrick, 2000a, 2000b). Lack of job skills and related experience create additional barriers to employment for people with disabilities (Unger, Wehman, Yasuda, Campbell, & Green, 2001).

In order to maximize the postsecondary and career success of individuals with disabilities, educators need to more fully understand the rights, capabilities and needs of students with disabilities; make appropriate adaptations to computers, lab equipment, and other technologies; provide mentoring, role models and college/career guidance and support to children with disabilities; help students with disabilities develop self-advocacy and self-determination skills; and provide work-based learning experiences for these students (Benz, Yovanoff, & Doren, 1997; Burgstahler, 1997; Doren & Benz, 1998; Leyser, Vogel, & Wyland, 1998; Phelps & Hanley-Maxwell, 1997). Although access to technology can help people with disabilities achieve higher levels of independence, productivity and participation in academic and career opportunities, they are less than half as likely as their non-disabled counterparts to own a computer, and they are about one-quarter as likely to use the Internet (Kaye, 2000).

Importance of Technology for Access to Postsecondary Education and Employment

High tech careers are particularly accessible to individuals with disabilities because of advancements in assistive technology that provide access to computers and scientific equipment for people with a variety of disabilities (Closing the

Gap, 2001). Although few students with disabilities pursue high tech postsecondary programs and careers (National Science Foundation, 2000; Price-Ellingstad & Berry, 1999/2000), those who succeed in these fields demonstrate that opportunities do exist for people with disabilities who have successfully overcome the barriers imposed by facilities, curriculum materials, technology, inadequate academic preparation, lack of role models, and negative attitudes in order to obtain a college education and technology skills (Burgstahler, 1993-2001; Changing America, 1989; DO-IT Snapshots 2000, 2000; Heidare, 1996; Jutai, Kalnins, Bortolussi, & Biggar, 1996; Presidential Task Force on Employment of Adults with Disabilities, 1999; Stern & Summers, 1995; Stevens, Steele, Jutai, Kalnins, Bortolussi, & Biggar,1996; Stodden, 1998).

Clearly, technology can help all students with disabilities prepare for college and careers. In addition, for those who have the interest and aptitude, advanced technology skills can open doors to high tech career fields that were once unavailable to people with disabilities.

Challenges to the Use of Technology for Individuals with Disabilities

There are two primary challenges to realizing the full potential of technology for students with disabilities – assuring access to and appropriate use of technology. Basically, how can we assure that students with disabilities:

- Gain access to the technology that contributes to positive postsecondary and career outcomes?
- Use technology in ways that contribute to positive postsecondary and career outcomes?

First, we will look at what specific roles technology can play in preparing young people with disabilities for postsecondary education and employment. Then, we will consider challenges that must be addressed in order for college-bound students with disabilities to gain these benefits.

The Role of Technology In Preparing Young People with Disabilities for Postsecondary Education and Employment

The following examples demonstrate how technology can be used by students with disabilities to prepare for college and careers. Specifically, technology can help them:

Maximize Independence in Coursework
Example: A student with a mobility impairment uses a hands-free keyboard and mouse to operate a computer to take class notes and complete papers rather than have an assistant write for her.

Participate in Classroom Discussions
Example: A student who cannot speak uses a computer-based communication devise to deliver speeches and participate in class discussions.

Provide Access to Peers, Mentors, and Role Models

Example: In a supported Internet community, a student who is deaf uses electronic mail to chat with other teens, gain support for college and career transition from mentors, and meet role models.

Offer Opportunities for Self-Advocacy and Self-Determination

Example: A student who is deaf or hard of hearing uses a TTY, relay service, or telephone with amplification to arrange appointments and communicate with service providers.

Gain Access to the Full Range of Educational Options

Example: A student who is blind and uses speech output technology to fully participate in an Internet-based distance learning course that employs universal design principles to assure access to people with disabilities.

Succeed in Work-Based Learning Experiences

Example: A student who has no use of his hands independently operates a computer to draft and edit articles in a journalism internship at the local newspaper office.

Prepare for the Transition to College and Careers

Example: A student with a learning disability that makes it difficult for him to read uses a computer with a speech output system to explore internship and career opportunities, take self-paced career readiness and interest tests, explore the academic programs offered at different colleges and universities, and investigate services for students with disabilities at colleges of interest.

Live More Independently

Example: A teen with a mobility impairment uses a voice-controlled system to operate the television, turn lights on and off, open doors, and perform other tasks of daily life.

Open Doors to High Tech Career Fields

Example: A child who shows interest in engineering at a young age, but does not have the fine motor skills to manipulate objects, gains technical knowledge using the Internet, operates computer simulations of engineering tasks, and develops a solid foundation for college studies and a career in engineering.

Challenges That Must be Addressed in Order for Individuals with Disabilities to Gain the Full Benefits of Technology

These examples demonstrate the important roles technology can play as young people with disabilities pursue postsecondary education and careers. However, significant challenges must be addressed in order for college-bound students with disabilities to gain the full benefits of technology as they transition to college and careers. They include:

Funding

Who will assure that students with disabilities gain access at a young age to empowering technology?

Selection

Who will select appropriate technology for students with disabilities at various levels in the educational and career preparation process?

Anytime, Anywhere Access to Technology

How can we assure that appropriate technology is available when and where people with disabilities need it?

Full Participation in Precollege Academic and Employment Offerings

How can educators, career services staff, and employers be better trained to understand the capabilities and accommodation needs of students with disabilities and use technology to help students with disabilities fully participate in academic and employment offerings?

Promotion of Self-Advocacy, Independence, and Self-Determination

How can we help parents, educators and service providers encourage students with disabilities to use technology to self-advocate, perform daily tasks independently, and move toward self-determined lives?

Peer Support, Mentoring, and Role Modeling

How can students with disabilities gain access to meaningful peer and mentoring relationships on the Internet?

Access to Distance Learning Options

How can we assure that distance learning program providers employ universal design principles to make courses accessible to potential students with a wide variety of abilities and disabilities?

Summary

Computers, the Internet, and other technologies have the potential to promote positive postsecondary and career outcomes for students with disabilities. However, this potential will not be realized unless stakeholders secure funding, become more knowledgeable about appropriate uses of technology; and work together to maximize the independence, participation and productivity of students with disabilities as they move toward college, careers, and self-determined lives.

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Working Together: People with Disabilities and Computer Technology

Sheryl Burgstahler, Ph.D.

People with disabilities meet barriers of all types. However, computers are helping to lower many of these barriers. As word processors have replaced typewriters, electronic spreadsheets have replaced handwritten books, and on-line services have supplemented telephone and written communication, disabled students and employees who have computer access have become capable of handling a wider range of activities independently. Although people with disabilities face a variety of barriers to providing computer input, interpreting output, and reading documentation, adaptive hardware and software have been developed to provide functional alternatives to standard operations.

Mobility Impairments

Input

Equipment which provides flexibility in the positioning of monitors, keyboards, documentation, and table tops is useful for many individuals with disabilities. Plugging all computer components into power outlet strips with accessible on/off switches makes it possible for some individuals to turn equipment on and off independently.

Some adaptive hardware and software assist individuals with little or no use of their hands in using a standard keyboard. Individuals who have use of one finger, a mouth- or head-stick, or some other pointing device, can control the computer by pressing keys with the pointing device. Software utilities can create "sticky keys" that electronically latch the SHIFT, CONTROL, and other keys to allow sequential keystrokes to input commands that normally require two or more keys to be pressed simultaneously. The key repeat function can be disabled for those who cannot release a key quickly enough to avoid multiple selections. Keyboard guards (solid templates with holes over each key to assist precise selection) can be used by those with limited fine motor control.

Sometimes repositioning the keyboard and monitor can enhance accessibility. For example, mounting keyboards perpendicular to tables or wheelchair trays and at head-height can assist individuals with limited mobility who use pointing devices to press keys. Other simple hardware modifications can assist individuals with mobility impairments. For example, disk guides can assist with inserting and removing diskettes; a dedicated hard disk and/or computer network access can eliminate or reduce the necessity to do so.

For individuals who need to operate the computer with one hand, left- and right-handed keyboards are available. They provide more effi-

cient key arrangements than standard keyboards designed for two-handed users.

Some hardware modifications completely replace the keyboard and/or mouse for individuals who cannot operate these standard devices. Expanded keyboards (larger keys, spaced far apart) can replace standard keyboards for those with limited fine motor control. Mini-keyboards provide access to those who have fine motor control but lack a range of motion great enough to use a standard keyboard. Track balls and specialized input devices can replace mice.

For those with more severe mobility impairments keyboard emulation is available, including scanning and Morse code input. In each case, special switches make use of at least one muscle over which the individual has voluntary control (e.g., head, finger, knee, mouth). In scanning input, lights or cursors scan letters and symbols displayed on computer screens or external devices. To make selections, individuals use switches activated by movement of the head, finger, foot, breath, etc. Hundreds of switches tailor input devices to individual needs. In Morse code input, users input Morse code by activating switches (e.g., a sip-and-puff switch registers dot with a sip and dash with a puff). Special adaptive hardware and software translate Morse code into a form that computers understand so that standard software can be used.

Voice input provides another option for individuals with disabilities. Speech recognition systems allow users to control computers by speaking words and letters. A particular system is "trained" to recognize specific voices.

Special software can further aid those with mobility impairments. Abbreviation expansion (macro) and word prediction software can reduce input demands for commonly-used text and keyboard commands. For example, word prediction software anticipates entire words after several keystrokes and increases input speed.

Output

Individuals with mobility impairments who have difficulty obtaining output from printers may need assistance from others.

Documentation

On-screen help can provide efficient access to user guides for individuals who are unable to turn pages in books.

Blindness

Input

Most individuals who are blind use standard keyboards, however Braille input devices are available. Braille key labels assist with keyboard use.

Output

Voice output can be used to read screen text to blind computer users. Special software programs "read" computer screens and speech synthesizers "speak" the text. The availability of earphones for individuals using voice output systems can reduce the distractions for others nearby.

Refreshable Braille displays allow line-by-line translation of the screen into Braille on a display area where vertical pins move into Braille configurations as screen text is scanned. Braille displays can be read quickly by those with advanced Braille skills, are good for detailed editing (e.g., programming and final editing of papers), and do not disrupt others in work areas because they are quiet. Braille printers provide output for blind users.

Documentation

Scanners with optical character recognition can read printed material and store it electronically on computers, where it can be read using voice synthesis or printed using Braille translation software and Braille printers. Such systems provide independent access to journals, syllabi, and homework assignments for blind students. Some hardware and software vendors also provide Braille or ASCII versions of their documentation to support blind users.

Visual Impairment

Input

Most individuals who have visual impairments can use standard keyboards, but large print keytop labels are sometimes useful.

Output

Special equipment for individuals who are visually impaired can modify display or printer output. Computer-generated symbols, both text and graphics, can be enlarged on the monitor or printer, thereby allowing individuals with low vision to use standard word processing, spreadsheet, electronic mail, and other software applications. For individuals with some visual impairments, the ability to adjust the color of the monitor or change the foreground and background colors is also of value. For example, special software can reverse the screen from black on white to white on black for people who are light sensitive. Anti-glare screens can make screens easier to read. Voice output systems are also used by people with low vision.

Documentation

Scanners with optical character recognition can read printed material and store it electronically on computers, where it can be read using voice synthesis or printed in large print. Some hardware and software vendors also provide large print or ASCII versions of their documentation.

Hearing and/or Speech Impairments

Speech and hearing disorders alone do not generally interfere with computer use. However, advanced speech synthesizers are close enough to human quality to act as substitute voices and thus provide a compensatory tool for students who cannot communicate verbally. Students with portable systems can participate in class discussions once adapted computers provide them with intelligible speaking voices. Word processing and educational software may also help hearing impaired students develop writing skills.

Input

Students with hearing disabilities generally do not have special problems inputting information with a standard keyboard and mouse.

Output

Alternatives to audio output can assist the hearing-impaired computer user. For example, if the sound volume is turned to zero, a Macintosh computer will flash the menu bar when audio output is normally used.

Documentation

Individuals with hearing impairments typically do not have difficulty using standard written or on-screen documentation.

Specific Learning Disabilities

Educational software where the computer provides multi-sensory experiences, interaction, positive reinforcement, individualized instruction, and repetition can be useful in skill building. Some students with learning disabilities who have difficulty processing written information, can also benefit from completing writing assignments, tutorial lessons, and drill-and-practice work with the aid of computers. For example, a standard word processor can be a valuable tool for individuals with dysgraphia, an inability to produce handwriting reliably.

Input

Quiet work areas and ear protectors may make computer input easier for individuals with learning disabilities who are hyper-sensitive to background noise.

Software that aids in efficient and accurate input can also assist. Some people can compensate for high rates of input errors by using spell checkers, thesauruses, and grammar checkers. In addition, word prediction programs (software that predicts whole words from fragments) have been used successfully by students with learning disabilities. Similarly, macro software which expands abbreviations can reduce the necessity to memorize keyboard commands and can ease the entry of commonly-used text.

Output

Some learning disabled individuals find adaptive devices designed for those with visual impairments useful. In particular, large print displays, alternative colors on the computer screen, and voice output can compensate for some reading problems. People who have difficulty interpreting visual material can improve comprehension and the ability to identify and correct errors when words are spoken or printed in large fonts.

Documentation

Some individuals with learning disabilities find it difficult to read. Computer documentation provided in electronic forms can be used by enlarged character and voice synthesis devices to make it accessible to those with reading difficulties.

Next Steps

Continue your exploration of adaptive technology by:

- Buying the newspaper or directory and/or attending the conference of

  Closing the Gap
  P.O. Box 68
  Henderson, MN 56044
  (612) 248-3294

  http://www.closingthegap.com/

- Contacting the Tech Act resource center in your state; call RESNA at (703) 524-6686, or visit http://www.resna.org/resna/hometa1.html for information.
- Joining electronic discussion lists and accessing resources on the Internet. A good place to start is the DO-IT home page at http://www.washington.edu/doit/.

Equal Access: Computer Labs

Sheryl Burgstahler, Ph.D.

As increasing numbers of people with disabilities pursue educational opportunities that require computer use, accessibility of computing facilities becomes even more critical. The key is simply equal access. Everyone who needs to use your lab should be able to do so comfortably..

To make your lab accessible, employ principles of universal design. Universal design means that, rather than design your facility for the average user, you design it for people with a broad range of abilities. Keep in mind that individuals using your lab may have learning disabilities or visual, speech, hearing, and mobility impairments.

As you plan services in your computing facility, consider all of your potential users, including those with disabilities. Make sure visitors can:

- get to the facility and maneuver within it.
- access materials and electronic resources.
- make use of equipment and software.

Also make sure that staff are trained to support people with disabilities and have a plan in place to respond to specific requests in a timely manner. With these key issues in mind, you can make your lab accessible to everyone.

The following general access questions can help guide you in making your facility universally accessible.

Building Access

__ Are parking areas, pathways, and entrances to the building wheelchair-accessible?

__ Are doorway openings at least 32 inches wide and doorway thresholds no higher than 1/2 inch?

__ Are ramps and/or elevators provided as alternatives to stairs?

__ Are elevator controls accessible from a sitting position?

__ Do the elevators have both auditory and visual signals for floors? Are elevator controls marked in large print and Braille or raised notation?

__ Have protruding objects been removed or minimized for the safety of users who are visually impaired?

__ Are wheelchair-accessible restrooms near the lab marked with high visibility signs?

__ Are there ample high-contrast, large print directional signs to the lab?

__ Are telecommunication devices for the deaf (TTYs) available?

Lab Staff

__ Are staff members familiar with the adaptive technology and alternative document formats available in the lab?

__ Are staff members aware of disability issues? (See Helpful Communication Hints)

Physical Space and Printed Materials

__ Are large print, high-contrast signs used in the lab?

__ Are computers labeled as accessible in large print and Braille?

__ Are aisles kept wide and clear for wheelchair users?

__ Is at least one table for each type of workstation adjustable so that a person in a wheelchair, or a person of short stature can achieve a comfortable position? Can the adjustment controls be reached by wheelchair users?

__ Are document holders available to help position documentation so that it can be easily read?

__ Is all documentation available (or available in a timely manner) in alternative formats such as Braille, large text, audio, and electronic text? Are printed materials within easy reach from a variety of heights without furniture blocking access? Is a CCTV or large magnifying glass available to enlarge printed materials?

__ Are hearing protectors available for users who are distracted by noise in the facility?

Computers and Software

__ Do some keyboards have large print key labels, Braille labels, or home-row key indicators to help users with visual impairments locate keys?

__ Is screen enlargement software available for users with low vision? Are large monitors available so that a larger amount of screen can be viewed while magnified?

__ Is speech screen output available for visually impaired and learning disabled users? Are headphones and volume adjustment available?

__ Are mouse alternatives such as trackballs, keyboard control of the mouse, or other pointing devices available for those who have difficulty controlling a mouse?

__ Are keyboard guards available to assist users with impairments that limit fine motor control?

__ Are wrist rests available for those who require extra wrist support while typing?

__ Is equipment marked with large print and Braille labels?

__ Is software available to modify keyboard response such as sticky keys, repeat rate, and keystroke delay?

__ Are alternative keyboards such as a mini-keyboards or extended keyboards available for users with mobility impairments?

__ Are alternatives to keyboards such as a head pointing system, switch based interface, or voice dictation software available for users who cannot use keyboards?

__ Is word prediction software available to reduce the number of keystrokes needed for text entry?

__ Are one-handed keyboards or "keyboard layout" software available?

__ Are audio warning signals available visually?

More information about adaptive technology can be found in the DO-IT videotape and brochure titled Working Together: People with Disabilities and Computer Technology.

Electronic Resources

__ Are text alternatives provided for graphic images?

__ Is standard HTML used for Web resources so that they can be accessed with a text-based browser?

__ Are electronic resources accessible to people using adaptive technology?

More information about universal design of electronic resources can be found in the DO-IT videotape and brochure titled World Wide Access.

First Steps

Although a lab cannot be expected to have specialized equipment for every type of disability on hand, staff should make equipment available that they can anticipate will be used and/or is available at relatively low cost. Provide:

- Printed resources that can be reached by a wheelchair user.
- An adjustable table for each type of workstation in your lab.
- Keyguard and wrist rest.
- Trackball, joystick, or other mouse alternative.
- Signs with high contrast and large print.
- Large print keytop labels, screen enlargement software, and a large monitor.
- Screen reading software and speech synthesizer.
- Key documents available in formats accessible to those who have low vision or who are blind.
- In key lab documents a statement about your commitment to access and procedures for requesting disability-related accommodations.
- Lab resources on the World Wide Web that employ principles of universal design.

Once a lab is established or has greater requirements consider adding:

- Scanner and Optical Character Recognition (OCR) software.
- CCTV.
- Braille printer and Braille translation software.
- Word prediction software.
- Alternative keyboards.
- Voice input software.

In addition, develop a procedure to assure a quick response to requests for adaptive technology that you do not currently have available.

Videotape

An 11-minute videotape, Equal Access: Computer Labs, demonstrates key points summarized in this handout. It may be ordered by sending a check for $25 to DO-IT.

Resources

DO-IT (Disabilities, Opportunities, Internetworking, and Technology)
http://www.washington.edu/doit/

EASI (Equal Access to Software and Information)
http://www.isc.rit.edu/~easi/

Trace Research and Development Center
http://www.trace.wisc.edu/

Closing The Gap
P.O. Box 68
Henderson, MN 56044
(612) 248-3294 (voice)
(612) 248-3810 (FAX)
CTGap@aol.com
http://www.closingthegap.com/

CSUN Technology and Persons with Disabilities conference
Center on Disabilities
California State University, Northridge
18111 Nordhoff Street - DVSS
Northridge, CA 91330-8340
(818) 885-2578 (voice)
(818) 885-4929 (FAX)
ltm@csun.edu
http://www.csun.edu/cod/introtc.html

Helpful Communication Hints

There are no strict rules when it comes to relating to people with disabilities. However, here are some helpful hints.

General

Treat people with disabilities with the same respect and consideration that you do with others.

Ask a person with a disability if he/she needs help before helping.

Talk directly to the person with a disability, not through the person's companion.

Refer to a person's disability only if it is relevant to the conversation.

Avoid negative descriptions of a person's disability. For example, "a person who uses a wheelchair" is more appropriate than "A person confined to a wheelchair."

Refer to the person first and then the disability. "A man who is blind" is better than "a blind man" because it emphasizes the person first.

Visual Impairments

Be descriptive for people with visual impairments. Say, "The computer is about three feet to your left," rather than,"The computer is over there."

When guiding people with visual impairments, offer them your arm rather than grabbing or pushing them.

Always ask permission before you interact with a person's guide or service dog.

Learning Disabilities

If asked, read instructions to users with a specific learning disability.

Mobility Impairments

Try sitting or crouching to the approximate height of people in wheelchairs when you interact.

Speech Impairments

Listen carefully and ask people with speech impairments to repeat what they have said if you don't understand.

Hearing Impairments

Face people with hearing impairments and speak clearly when you talk to them so they can see your lips.

About DO-IT

The University of Washington is working to increase the representation of individuals with disabilities in challenging academic programs and careers through project DO-IT (Disabilities, Opportunities, Internetworking, and Technology). Primary funding for the DO-IT program is provided by the National Science Foundation, the State of Washington, and the U.S. Department of Education.

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Director: Sheryl Burgstahler, Ph.D.

Peer Support: What Role Can the Internet Play?

Sheryl Burgstahler, Ph.D.

Abstract

The need to provide access to mentors and adult role models for students with disabilities is well-documented. However, peer relationships also offer developmental opportunities that should not be overlooked or undervalued. Peers can act as role models, offer friendship, advice and information, promote a sense of belonging, and empower each other. The experiences of an active electronic community of high school students with disabilities demonstrate that computer-mediated communication (CMC) provides an environment where rich peer relationships can be experienced.

The results of a study of participant experiences suggest that CMC between peers can help ease the social isolation and advance the academic and career goals of students with disabilities.

Introduction

Many young people with disabilities have few friends and limited support from peers (Gottlieb & Leyser, 1981). They often report feelings of rejection and isolation. The impact of social isolation is far-reaching, affecting not only friendships, but also academic and career success (Hawken, Duran, & Kelly, 1991). Ultimately, people with disabilities experience higher unemployment rates and lower earnings (McNeil, 1997).

As the end of high school approaches, so does the termination of a structured environment and pre-college support systems (Burns, Armistead, & Keys, 1990). When compared to people without disabilities, people with disabilities are less prepared to meet the challenges of adulthood, more likely to continue to live with their parents after high school, and engage in fewer social activities (Moccia, Schumaker, Hazel, Vernon, & Deshler, 1989).

Students with disabilities are rarely encouraged to prepare for challenging fields such as science, engineering and mathematics, and they are less likely to take the courses necessary to prepare for post-secondary studies in these areas (Burgstahler, 1994; Malcom & Matyas, 1991; National Science Foundation, 1997).

Although higher education can enhance their employability and vocational success, fewer young adults with disabilities participate in post-secondary education and, of those who begin such programs, disabled students are more likely than non-disabled students to drop out of school prior to completion (DeLoach, 1992; Moccia et al; Wagner). Adolescents with disabilities who wish

to attend college are often faced with responsibilities they are unprepared to meet because they are conditioned to depend on others, and they lack self-advocacy and independent-living skills (Transition summary, 1988). Those enrolled in college often hesitate to request the specific accommodations they need (Amsel & Fichten, 1990).

The levels and types of resources available to students with disabilities change as students move from pre-college programs to post-secondary campuses and to employment situations, and programs to help bridge the gaps between these critical stages are rare. Students with disabilities can benefit from interactions with peers and adults with disabilities who are pursuing and participating in academic and career activities that they might otherwise have thought impossible for themselves. However, they are often isolated by great distances, transportation and scheduling challenges, communication limitations, and other obstacles that make it difficult for them to meet and interact in person (Aksamit, Leuenberger, & Morris, 1987; Brown & Foster, 1990).

Peer Support

Benefits from positive relationships with others exist for everyone, including people with disabilities. Many types of relationships are important to development - parents, siblings, grandparents, friends, and adult mentors all play key roles in people's lives. One approach to successfully integrating isolated students into academic environments is to help create informal peer support groups and friendships. Social support can ease the transition period following high school when a student's structured environment ends and many support systems are no longer in place (Burns, Armistead, & Keys, 1990; Ostrow, Paul, Dark, & Berhman, 1986, in Jacobi, 1991; Stainback, Stainback, & Wilkinson, 1992).

Peers can serve some of the same important functions generally associated with adult mentors. Peers can act as role models; offer friendship, advice and information; promote a sense of belonging; and empower one another (Byers-Lang & McCall, 1993; Kram & Isabella, 1985; Stainback, Stainback, & Wilkinson, 1992). However, peer relationships tend to involve greater reciprocity and mutuality, encouraging each participant to be the giver as well as the receiver of support (Burns, Armistead & Keys, 1990; Kram & Isabella). Students can discover their potential to participate in academic opportunities and careers by interacting with others with similar interests and concerns.

Forming peer support groups can be problematic for students with disabilities. Specific challenges result because mainstreaming limits their

interactions with other students with disabilities. They often experience rejection by their non-disabled peers, and barriers to social activities result from their disabilities (e.g., lack of the ability to speak, unavailable transportation, need for an interpreter or personal assistant, inaccessible buildings).

Computer Mediated Communication

Computer-mediated communication (CMC), where people use computers and networking technologies to communicate with one another, can connect people separated by time and space who might not otherwise meet. The removal of social cues and social distinctions like disability, race, and facial expression through text-only communication can make even shy people feel more confident about communicating with others. Young people can learn in ways that people learn best - through sharing information, questioning information, verbalizing opinions, weighing arguments, and active learning (Harasim, 1990). Although proximity is critical to developing peer and mentor support in most settings (Stainback, Stainback, & Wilkinson, 1992), the Internet provides a medium that has the potential to build and sustain human relationships over great distances.

Adaptive technology makes it possible for anyone to participate in computer-mediated communication regardless of disability. For example, people who are blind can access computers using voice output and those with mobility impairments can use head sticks, voice input, alternative keyboards and other devices to overcome barriers imposed by a standard keyboard. In addition, people with hearing and speech impairments communication more fully electronically than in face-to face interactions (Burgstahler, 1993). The combination of adaptive technology and Internet communication can help overcome the geographic, temporal, and disability-related barriers to establishing peer support groups. There is some evidence that CMC can reduce social isolation and allow independent access to information resources (Burgstahler, Baker, & Cronheim, 1997; D'Sousa, 1991; Pemberton & Zenhausern, 1995; Stephenson, 1997).

These Kids DO-IT!

The DO-IT project demonstrates the role that CMC can play in helping disabled students minimize social isolation and achieve academic and career goals. DO-IT (Disabilities, Opportunities, Internetworking, and Technology), winner of the President's Award for "embodying excellence in mentoring underrepresented students and encouraging their significant achievement in science, mathematics, and engineering," is directed by the University of Washington and primarily funded by the National Science Foundation. DO-IT works to increase the participation of students

with disabilities in academic programs and careers in science, engineering, and mathematics (SEM). DO-IT Scholars, college-bound disable d high school students interested in SEM from throughout the country, meet face-to-face during short live-in summer study programs a t the University of Washington in Seattle. DO-IT Scholars then communicate year-round with each other and adult mentors and access information resources via the Internet. A wide range of disabilities is represented in the group, including mobility impairments, hearing impairments, visual impairments, health impairments, and specific learning disabilities.

Exploratory Study of Peer-to-Peer CMC

An exploratory study, building on earlier work (Burgstahler, Baker, & Cronheim, 1997), was undertaken to examine the role that CMC can play in easing the social isolation and advancing the academic and career goals of students with disabilities. Research data came from several sources. Seven thousand, seventy three electronic mail messages exchanged between 38 DO-IT Scholars during a two-year period were collected and coded according to the contents of the messages. Participation was voluntary. Private messages which participants elected not to copy to the research archive were not included in the study. In addition, Scholars documented their interests in survey questionnaires and focus groups and parents of Scholars recorded their impressions in survey questionnaires and letters.

Results and Discussion

Most DO-IT Scholars report that they use Internet resources daily. They like computers for a number of reasons. Computers are engaging and fun. When combined with adaptive technology, computers help them overcome physical, communication, and cognitive challenges imposed by their disabilities. Computers facilitate access to people and resources. As one Scholar wrote, "It's easy, and fast and you can download things. I use it every day I can...I love to use the computer and everything on-line. If I had it taken away I think I would go crazy."

One parent noted that her son was using the computer "anywhere from four to seven days a week," and another remarked that the single biggest benefit of the DO-IT program to her son was "constant computer use where there was minimal interest before."

Scholars most often use their Internet accounts to communicate via electronic mail. The table below summarizes the content of the electronic messages exchanged between Scholars. Each message was coded by content and according to whether a participant is seeking information or providing information in a message. (Note

that percentages add to more than 100% because some messages include content in more than one category. For example, this message, in response to two questions posed by another Scholar, was coded as providing both academic information in SEM and personal information: "First question. I am taking health and, yes, I hate it with a passion. Oh well, have to have it to graduate. Second question. Yes we have a winter dance, and yes I am going. :)."

Peer-to-Peer Scholar Messages
7,073 messages from June, 1993, through May, 1995

	Seeking Information	Providing Information
Personal	26%	60%
Disabilities	2	9
DO-IT Activities	8	24
Technical/Internet	16	42
Academic, SEM	2	8
Academic, non-SEM	6	19
College Transition/ Adaptation	3	8
Career/Work	1	7

Results summarized in the table suggest that Scholars tend to provide information more than seek information in their messages. Also, most messages include personal information and the largest topic area is related to technology and the Internet.

Many Scholars praise the unique capabilities of CMC, including its speed, efficiency, and low cost. One Scholar points out: "Email is easier than writing and quicker and I can do it on my own if I need t o and people ask questions about their disabilities so they can get extra help." Another says, "...email is a lot easier and it's usually faster and more effective this way to communicate information back and forth to each other."

Scholars report that CMC overcomes communication barriers related to their disabilities. For example, one of a pair of quadriplegic students who good-humoredly characterize themselves as the "The Quad Squares" and who regularly communicate on the Internet confides, "It's kind of hard for two gimps to get together." A deaf Scholar notes, "I like electronic communication because I don't need an interpreter on the Internet or my TTY." With CMC, it is not uncommon for a student who cannot speak with his voice to become the most vocal in a conversation. One participant notes that he appreciates that this type of communication "kinda hides what type of disability you got."

On the other hand, some negative characteristics of electronic communication are reported by participants in the study. "Sometimes you get misinterpreted; you are not able to show expressions or emotions." And, it's "possibly not private."

Meeting Social Needs

Personal topics represent the highest content area coded in Scholar messages. Scholars both seek personal information from others and provide personal information about themselves. As one Scholar noted, "It's just fun to talk with people and see how they are doing. I like sharing humorous things with them and telling about my life and hearing about theirs." Students often use electronic mail to get ideas and assistance from those in similar situations. Students disclose information about their disabilities and seek solutions to barriers they're facing.

Scholars report making and maintaining friendships with other disabled youth as the most significant benefit of participating in DO-IT, saying, "I like the fact I have made many good friends with various disabilities." One poignantly expressed this insight: "Just meeting and interacting with others like me has given me the realization that I'm okay."

The ability to meet people across time and space is emphasized by many in comments such as, "I like the Internet so I could contact lots of people in other countries; You can meet people from all over the place, whereas you couldn't meet them if you didn't have a modem." and "On the Internet I have access to a whole world of people and information. This is an experience that I will appreciate for the rest of my life."

Scholars also use electronic mail to sustain relationships once they have been established. "You get to talk to people even though you don't see them that much and they're far away." One Scholar looks back on her life since joining the DO-IT community: "I have since made many friends world-wide. "I have a "family" via the net and have learned many things. I also have a whole group of unbiased people that I can communicate through a few strokes of a key. The DO-IT program has changed my life forever."

Messages about DO-IT activities document the value of social supports provided by non-Internet-related events sponsored by DO-IT. For example, one Scholar wrote to the group: "I've been thinking. It's been awhile since we've seen each other and we may not see each other until spring break. I personally miss hanging out with you guys. So, I was wondering, is there any way we can get together around Christmas and do something. I know this is rather short notice, but I don't think it would have to be anything complicated. Of course, I just may be complicated anyway. Anyway, if anyone has any thoughts on this, let 'em rip and maybe something interesting will happen."

Parents agree with Scholars when it comes to the value of social supports provided by peers. One parent points out that through DO-IT her deaf child "was afforded the opportunity to meet students from different parts of the country who struggle with a disability." Another parent said, "This program has given her self-confidence, friendships for a lifetime, and has opened the world of computers and the World Wide Web for her. Because of her profound hearing loss, [name's] world is silent. ...The students she met through this program have also become some of her best friends. I have never see n bonding like have watched [name] experience. I'm not sure why, but she became very close to her DO-IT family right away. Perhaps it's because all of these talented young people have experienced some sort of pain or misunderstanding because of their disabilities. Whatever the reason, they became very close friends quickly. [name] visits with friends clear across the country via the Internet and they help each other through difficult times. When she had her kidney transplant last summer, it was her friends from DO-IT who were the most constant and supportive."

One parent, who rated "The ability to communicate via the Internet and the ability to find a social connection at home" as the most noticeable benefits of the DO-IT project for her child, summarizes these sentiments, "...the high school years are years of learning about ourselves for everyone, and [adults and other students] don't make time for kids who are different...they are too busy with their own lives. DO-I T provides an outlet for kids who are 'different'." A parent of a student with a physical disability "observed [name] interacting with kids from all over the country. Each had unique physical challenges. I was pleased to see [name] become more social than I had ever seen him before. His confidence seemed to grow daily throughout the experience. He was l earning that he was not alone facing the world as a disabled youth."

Scholars use electronic mail to discuss the importance of friendships and how to make and keep them. One Scholar graduate, now in college, shared her insights with younger Scholars: "I think I've learned from being with people. I'm not so self-conscious or uncertain of myself . Friends have also reintroduced me to things like crayons and taught me card games and so on. Not only is it fun to hang out with people, but it's emotionally uplifting. Life wouldn't be as worthwhile without friends." Scholars share challenges in socializing and successful strategies they have discovered. As shared by one Scholar, now in col-

lege, " I think that blind people face the particular challenge of not being able to walk up to someone with whom they would like to talk unless they hear their voice, or the person introduces him- or herself. In the dining hall, for example, I always asked someone to help me find a seat, but that person would not necessarily know the people I liked to sit with, so it was a game of chance. Sometimes , I met new people, sometimes I happened to sit next to good friends, and sometimes I was unable to join in the conversations around me. However, by making friends in certain interest groups and arranging to meet friends for a meal, I was able to keep in touch with the people I cared about."

Promoting Academic Success

Scholars discuss academic issues related to science, mathematics and other academic areas, as well as college transition and adaptation. Many Scholars report that access to Internet resources provides a way for them to obtain information which was previously hard to get due to their disabilities. One explains, "...one advantage of electronic communication is that you can acquire more information at a time. You do not have to work so hard to write things down while someone is talking to you since I have all the information coming up on a screen, I can go back and refer to it whenever I need to."

The importance of information access is documented by one high school Scholar in an essay that won runner up in a national contest sponsored by the National Center for Education Statistics, the NASA K-12 Internet project and the National Science Foundation. He said, "... I have been blind all my life, and have never known anything different. I have been mainstreamed in schools all my life, and have always had to depend on others to get me school materials. If I needed or wanted a book for class, it had to be transcribed into Braille or put on tape. However, in August of last year a whole new door was opened to me. I am a member of the DO-IT (Disabilities, Opportunities, Internet working and Technology) Program at the University of Washington ... Getting Internet access was the best thing that ever happened to me. In a way, my computer and access to the net has become my eyes to the world. I can read a newspaper, talk to people around the world, and get materials for class papers, unlike before when I had to depend on others to get the resources I needed. Upon receiving my access in August of 1993, I was able to read a newspaper for the first time in my life. This may sound trivial but to me it was a great accomplishment. I was not aware of the variety of topics cov-

ered by newspapers. I knew about the front page, feature articles, and sports section, for instance, but I did not know of the huge amount of stories in these sections. I was amazed. Before getting access I had to get sighted people to read me the paper. However, with the help of a screen reader and a host at the University of Washington called UWIN (University of Washington Information Navigator), I browsed through the paper, found just what I w anted to read, and read it. I can even mail myself the articles and save them; somewhat like how you cut articles that you like out of the paper to save for future reference. This was amazing to me. And not only can I read the Washington Post, but also the Moscow News, and several other papers mainly used by scientists. So, the Net has helped me get in better contact with the world via online newspapers."

The content of messages between Scholars indicates that these students are assisting each other through CMC in much the same way students informally help each other at school. For example, an exchange between several blind students includes the message, "I have a dilemma. Did you take Chemistry, and if so, where did you guys get the periodic table?

Second, did you take Trig? If so, how did you use a graphic calculator?" Scholars use each other as academic resources. One Scholar confesses, "I like to communicate with other people to get some information for my research." Others wrote, "I learn a lot from [other Scholars]. I learn about activities that are coming up and I learn more about different electronic resources." "I can communicate with others asking questions about all different issues," and "I like getting opinions from them."

Advancing Career Goals

A relatively small number of Scholar messages include content related to careers. Perhaps, because they are still in high school and focused on college transition, specific career choices seem too far off. Perhaps, this is an area better discussed with adults who have more career experiences.

Scholars recognize that being able to effectively use computers and the Internet are valuable academic and career skills in themselves. Some are planning careers in computing and many point out that computing skills are helpful in advancing any academic or career goal. The interest Scholars express in developing their computer-related skills is reflected by the large volume of messages between Scholars about "technical/Internet" matters (16% seeking and 43% providing technical/Internet information). A single question posted on a discussion list often elicits multiple replies.

Scholars inspire, tutor and act as role models for each other. They help each other gain career skills. For example, in a response to request from a Scholar for help with programming, another Scholar says , "I write programs in almost any language, but my favorite is called Visual Basic. I develop applications for anyone who wants them, but I al so like to write educational multi-media applications. If there's anything else I can do, just let me know." A blind Scholar summarizes what he has gained from others: "By meeting new people, learning and using the Internet, talking through e-mail, and much more , I feel this program has made me more knowledgeable in more ways than I can say."

Some electronic communications support in-person events that advance career goals for Scholars and other students with disabilities. For example, after completing a summer internship at a scientific lab, a Scholar arranged a tour of the facility for local students with disabilities; all of the planning was done via the Internet.

Scholars' parents also report that using computers and the Internet are valuable in developing their children's job skills. The impact on future employment is voiced in this way by one parent of a child with a mobility impairment: "until your program came along, [name] lived such a limiting life. The rural area we live in has nothing to offer. Your program gave [name] a sense of independence and self confidence she so desperately needed. She is very active on the computer now, thanks to you. She learned so much about the Internet and even began a disabilities group. [name] didn't have much hope about a future, but now, she can see a future of some sort of employment using the computer."

Summary

Computer-mediated communication can help ease the social isolation and advance the academic and career goals of students with disabilities by connecting them to a community of peers who support each other. CMC between peers helps young people with disabilities build computer and Internet skills; gain access to people and resources difficult to reach in other ways; connect to peers with information, skills and knowledge to share; and receive opportunities to act as role models and mentors to each other. CMC provides many of the same benefits as face-to -face friendships and support. The mutual exchange of personal information and the longevity often exceed those of other relationships.

The CMC experiences of the DO-IT Scholars suggest that electronic peer support groups merit further study. Questions that could be pursued include:

- How do peer-to-peer CMC benefits compare with those of face-to-face peer groups?
- How do the benefits of peer-to-peer communication compare with mentor-to-protege communications on the Internet?
- How do the benefits of CMC compare between students who have different types of disabilities?

Without a doubt, DO-IT Scholars gain lifelong benefits from meeting each other on the 'Net. As beautifully stated by a participant who has moved on to college and now mentors younger Scholars,"...I made some best friends along the way who I still talk to and confide in even now. I learned how much we are all alike in the mind. Our disabilities are only what most people see. As for what I learned about myself? I learned there are no boundaries. In today's world, a disability is no barrier. I saw so many people do so many different things. My friend [name] has cerebral palsy that affects her ability to walk, and move. Never have I seen such determination and love for life as I saw it in her. With the help of accommodations, she is able to do anything a person without CP can do on the computer and in everyday life. Another friend of mine uses a head piece to operate the computer because he is paralyzed from the neck down. He too, blows me away with his sense of humor and strength. I could go on and on but I think you get the idea. Looking at them, I am able to find within me what they have found within themselves. A quiet strength and love for life and myself."

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Opening Doors through Mentoring: One Program's Experiences Using the Internet

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Deb Cronheim

(This article is based on the DO-IT presentation at the Technology and Persons with Disabilities Conference 1999.)

Most of us can think of people in our lives, more experienced than ourselves, who have supplied information, offered advice, presented a challenge, initiated friendship, or simply expressed an interest in our development as a person. Without their intervention we may have remained on the same path, perhaps continuing a horizontal progression through our academic, career, or personal lives.

The term "mentor" has its origin in Homer's Odyssey, in which a man named Mentor was given the responsibility to educate the son of Odysseus. "Protégé" refers to the person who is the focus of the mentor. Today, mentoring is associated with a variety of activities including teaching, counseling, sponsoring, role modeling, job shadowing, academic and career guidance, and networking.

Mentoring in DO-IT

Mentors are valuable resources to their protégés in project DO-IT (Disabilities, Opportunities, Internetworking, and Technology). DO-IT, primarily funded by the National Science Foundation and the State of Washington, serves to help young people with disabilities successfully transition to challenging academic programs and careers, including science, engineering, mathematics, and technology. Most DO-IT Mentors are college students, faculty, practicing engineers, scientists, or other professionals who have disabilities. Protégés are high school students who are making plans for post-secondary education and employment. They all have disabilities including vision, hearing, mobility, and health impairments, and specific learning disabilities. Frequent electronic communications and personal contacts bring DO-IT protégés and mentors together to facilitate academic, career, and personal achievements. New mentors are given tips for getting started. They include:

- Get to know each protégé. What are his/her personal interests? Academic interests? Career interests?
- Introduce yourself. Share your personal interests, hobbies, academic interests, career path.

- Explore interests with protégés by asking questions, promoting discussion, pointing to Internet and other resources.
- Encourage participation in DO-IT activities and try to attend activities when possible. Mentor-protégé relationships are strengthened through face-to-face contact!
- Facilitate contact between students and people with shared interests or resources (e.g., professors, professionals, service providers, friends).

Introducing protégés to mentors with similar disabilities is a strength of the DO-IT program. As reported by one protégé she had never met an adult with a hearing impairment like hers before getting involved in DO-IT: "But when I met him, I was so surprised how he had such a normal life, and he had a family, and he worked with people who had normal hearing. So he made me feel a lot better about my future."

Participants learn strategies for success in academics and employment. Mentors provide direction and motivation, instill values, promote professionalism, and help protégés develop leadership skills. As one Scholar noted, "It feels so nice to know that there are adults with disabilities or who know a lot about disabilities, because I think that people who are about to go to college or start their adult life can learn a lot from mentors . . ." As participants move from high school to college and careers they too become mentors, sharing their experiences with younger participants.

There are probably as many mentoring styles as there are personality types and no one can be everything to one person. Each DO-IT participant benefits from contact with several mentors.

Most mentoring in DO-IT takes place via the Internet. Through electronic communications and projects using the Internet, mentors promote personal, academic, and career success. Electronic communication eliminates the challenges imposed by time, distance, and disability that are characteristic of in-person mentoring. For example, participants who have speech impairments or are deaf do not need special assistance to communicate via electronic mail. Those who cannot use the standard keyboard because of mobility impairments, use adaptive technology to operate their computer systems.

DO-IT encourages one-to-one communication between protégés and mentors via electronic mail. It also facilitates communication in small groups through the use of electronic discussion lists. For example, one group includes both mentors and protégés who are blind. They discuss common interests and concerns such as independent

living, speech and Braille output systems for computers, and options for displaying images and mathematical expressions. Messages can also be sent to all mentors or all protégés through special mailing lists.

While most communication occurs via electronic mail, some mentors meet their protégés during summer study programs at the University of Washington and at other DO-IT activities across the United States. In-person contact strengthens relationships formed on-line.

The DO-IT program received national recognition with The Presidential Award for Excellence in Mentoring "for embodying excellence in mentoring underrepresented students and encouraging their significant achievement in science, mathematics, and engineering." It was also showcased in the President's Summit on Volunteerism and received the National Information Infrastructure Award "for those whose achievements demonstrate what is possible when the powerful forces of human creativity and technologies are combined."

A Research Study

DO-IT has been studying the nature and value of electronic mentoring since 1993. Thousands of electronic mail messages have been collected, coded, and analyzed; surveys were distributed to Scholars and Mentors; and focus groups were conducted.

Preliminary findings suggest that computer-mediated communication can be used to initiate and sustain both peer-peer and mentor-protégé relationships and alleviate barriers to traditional communications due to time and schedule limitations, physical distances, and disabilities of participants. Both young people and mentors in the study actively communicate on the Internet and report positive experiences in using the Internet as a communication tool. The Internet gives these young people support from peers and adults otherwise difficult to reach, connects them to a rich collection of resources, and provides opportunities to learn and contribute. Participants note benefits over other types of communication. They include the ability to communicate over great distances quickly, easily, conveniently, and inexpensively; the elimination of the barriers of distance and schedule; the ability to communicate with more than one person at one time; and the opportunity to meet people from all over the world. Many report the added value that people treat them equally because they are not immediately aware of their disabilities. Negative aspects include difficulties in clearly expressing ideas and feelings, high volumes of messages, occasional technical difficulties, and lack of in-person contact.

Preliminary findings of this study suggest that peer-peer and mentor-protégé relationships on the Internet perform similar functions in providing participants with psycho-social, academic, and career support. However, each type of relationship has its unique strengths. For example, peer-to-peer communication includes more personal information than exchanges between mentors and protégés.

It is often reported in the literature that peer and mentor support can help students with disabilities reach their social, academic, and career potential. However, constraints imposed by time, distance, and disability make such relationships difficult to initiate and sustain. Practitioners and parents should consider using the Internet as a vehicle for developing and supporting positive peer and mentor relationships.

DO-IT Resources

To contact staff, request publications or ask questions about the program or the research study, send electronic mail to doit@u.washington.edu. For information resources related to DO-IT or to improving access to college, careers and technology for people with disabilities, consult the DO-IT World Wide Web page at http://www.washington.edu/doit/

Join the doitsem discussion list if you are interested in issues pertaining to individuals with disabilities and their pursuit of science, mathematics, engineering, and technology academic programs and careers. To join the group, send a message with a blank subject line to listproc@u.washington.edu. In the body of the message type "subscribe doitsem Firstname Lastname," where "Firstname Lastname" are replaced with your real name.

A 14 -minute videotape, Opening Doors: Mentoring on the Internet, may be ordered by sending a check for $25.00 to DO-IT. It describes the on-line community set up by DO-IT and features mentors and protégés with disabilities.

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Teaching on the Net: What's the Difference?

Sheryl Burgstahler, Ph.D.

Abstract

Much has been written about the revolutionary impact that networking technology will have on all levels of education. Multimedia simulations, real-time communications with experts around the globe, human-like interactions with artificial intelligence systems the list of imaginative applications seems endless. I explored an application that is much simpler and less dramatic than these possibilities. I set out to take a topic normally taught in a traditional classroom mode and deliver instruction in a distance learning program using standard Internet tools as the primary vehicle for information access, presentations, and discussion. My experiences demonstrate the exciting instructional options that the Internet offers and the new challenges that it creates.

The Course

Computers, adaptive technology, and the Internet network offer the potential to improve the lives of people with disabilities, making them more independent and productive and allowing them to participate in a wider range of life experiences. Over the years, I have presented a number of seminars and courses on this topic for teachers, parents, service providers, and individuals with disabilities. As with all traditional seminars and courses, the set of people who could enroll has been limited to those potential participants who could meet in a single place at a pre-specified time. To move away from this constraint, I considered the question "What is the feasibility of offering a successful course that typically involves demonstrations, discussions, and field experiences in a distance learning format using the Internet as the primary medium for the delivery of instruction?"

The adaptive technology class seemed a good choice to begin to answer this question. Now delivered world-wide over the Internet, Adaptive Computer Technology is offered for three college credits in both rehabilitative medicine and education through the University of Washington. The course surveys the field of adaptive technology as it impacts the lives of people with disabilities, including the performance of tasks related to employment, education, and recreation. Topics include interface devices, computer applications, compensatory tools, access to information technology, legal issues, and implementation strategies. It is designed primarily for physical, speech, occupational, and rehabilitation therapists; counselors; librarians; special education teachers; computer technology support staff; and other service

providers. People with disabilities and parents of children with disabilities have also taken the course.

The Tools

In the traditional course format a text, videotapes and slides, instructor lectures, printed handouts, products to demonstrate, and a classroom are the primary instructional tools. In the distance learning version, the primary vehicles for learning are:

a text,

a videotape,

electronic mail,

a course electronic distribution list (ListProcessor software), and

a World Wide Web server.

The Instructor(s)

The first time this course was offered I team taught it with Dr. Norman Coombs, a professor at the Rochester Institute of Technology in New York. Team teaching is not new, but in a traditional class the instructors must be in the same place at the same time with the students. This is not true of a distance learning course taught via the Internet. Dr. Coombs and I have co-presented at conferences and in workshops before, when it was possible for us to be in the same place at the same time. For the distance learning course we prepared materials and coordinated lessons via electronic mail. We "met" many times to discuss the progress of the course, but never in person.

Meeting Place and Time

In a traditional course students must come together in a common location on a regular schedule. In the distance learning version of the course, no common location or schedule is required. Students enroll through the Distance Learning program at the University of Washington. All students are placed on an electronic distribution list managed by ListProcessor software on a Unix host computer. The course begins on a given date. The ListProcessor software handles distribution of the syllabus and other course materials via electronic mail. Students are required to read and respond to electronic mail at least once per week over a period of 10-12 weeks while lessons are regularly distributed. The course continues for a total of six months, by which time all assignments and the final exam must be complete.

The Text

As with a traditional course, the distance learning version requires a textbook. Reading assignments are distributed via electronic mail with the weekly lessons.

The Lessons

In a traditional class, lectures and handouts are used to deliver content. In the distance learning course, lessons are distributed weekly to

the course distribution list; they fill the role of course lectures and handouts. Once distributed, the lessons are archived on the course World Wide Web site where they can be easily referenced by the students and instructors.

Class Discussions

In a traditional class, in-person discussions provide opportunities for students to ask questions and share knowledge and experiences. Such discussions are generally limited to the scheduled class times plus whatever time can be arranged outside of the scheduled time. In the distance learning class, full-class discussions take place via the class electronic distribution list. Small group discussions can break off from full-class discussions as people find common interests and concerns. Participants can also communicate individually with each other and with the instructor via electronic mail. In this day of the part-time, commuter student, it is often difficult to find a convenient time for instructor and student to meet. On the Internet, individual student-teacher communications can take place efficiently.

As in a traditional class, class participation can be required in a distance learning class offered on the Internet. To keep communications lively and prevent some students from just "lurking" (i.e., observing without participating), I require, each student to contribute at least one comment (i.e., electronic mail message) to the discussion of each lesson. All messages posted to the distribution list are archived on the course World Wide Web site for easy reference.

Product Demonstrations

In a traditional course on adaptive technology, there would be demonstrations of products, either live or using videotapes or slides. In the distance learning course, students purchase, as part of the required course materials, a videotape which overviews adaptive technology options. After the assignment is given to watch the videotape, the class discusses the content using the course electronic distribution list. Eventually, videotaped materials will likely be distributed over the Internet along with the other course materials.

Guest Speakers

In a traditional class, guest speakers bring specialized expertise and new perspectives to the group. In most cases, possibilities for guest speakers are limited to those who live and work within easy driving distance of the course location or those who happen to be visiting at the right time. On the Internet, this constraint disappears; a guest speaker can join in class discussions easily, regardless of where the speaker lives or works. In the adaptive technology distance learning class, one of the guest speakers is the author of the course text, who lives far away from the University of

Washington. Further, instead of participating in just one class session, he is able to participate in the course for several weeks.

The Library

The library is an important resource for a traditional class. Journal articles and books can be placed on reserve for course participants and students can be directed to other useful resources. To use these materials students have to make a trip to the facility. In the adaptive technology class, our World Wide Web site is the course "library." Links to other resources provide students with thousands of pages of useful resources for their papers, and projects. For example, for some students, having access to the full text of the Americans with Disabilities Act is of interest. This, and other reference materials, are easily accessible from the course Web site.

Assignments

In a traditional class, course assignments are usually handed to the instructor in printed form. In the distance learning course, all assignments are turned in to the instructor via electronic mail. Summaries, and sometimes entire papers, are easily shared with the rest of the class via the course distribution list. The first assignment for students in the adaptive technology distance learning class is to distribute an introductory biography to the rest of the class via the course distribution list. The second assignment is to respond with at least one e-mail message to each of the ten lessons. Three additional "papers" are required. They involve writing on a topic related to the course content using and referencing Internet resources, visiting a site and evaluating electronic access issues for individuals with disabilities, and making recommendations regarding access for a particular facility or program.

Field Experiences

A field trip to a computing facility that uses adaptive technology is a valuable experience for students in this course. Since students in the distance learning class are from all over the world, there is not an opportunity for everyone to go on a trip to the same site. However, this educational experience can still be incorporated in the distance learning model. Students are required to make a site visit as part of one of their assignments; they are encouraged to go with another student if one lives nearby. If there are no nearby facilities that use adaptive technology, they can visit a site such as a library, collect information about access issues, and make recommendations for improving accessibility to computing resources for visitors with disabilities.

The Final Exam

An in-class written exam or a take-home exam is common in a traditional course. In the adaptive technology course students take the exam as soon as they are ready (but before the six-month ending date of the course). When ready, they request the exam via electronic mail. It is delivered to them via e-mail. Each student has several days to complete the essay exam. They may access printed and electronic resources while completing the exam.

Access Issues

This distance learning course attracts people from all over the world. Some of them have disabilities. It is important that course materials be accessible. Since all electronic lessons and other resources in this course are available in text form, they can be accessed with standard adaptive technologies. This can be important for the instructors as well, For example, Dr. Coombs is blind and uses a screen reader and speech synthesizer to read lessons, electronic mail discussions, and assignments submitted by students. Other course materials are also accessible to people with disabilities. The videotape is open captioned for hearing impaired students and is available in descriptive video form for individuals who are blind. The textbook is available in recorded form for students who are blind or who have specific learning disabilities from Recordings for the Blind and Dyslexic.

Providing the course using the Internet actually enhances accessibility for people with disabilities. Electronic text materials are generally highly accessible to those with disabilities. Media conversion and other customized accommodations are minimized since participants already have access to computers when they enter the class. Whatever adaptive technologies they use facilitate the accommodations. For example, a blind student does not need the lessons produced in Braille or on tape; his/her existing computer output method (usually a screen reader and voice synthesizer) provides the accommodation. Similarly, a deaf student does not require interpreters or amplification systems since lectures and discussions occur on-line. The inability to speak, hear, see, or move is not a limitation in electronic communication. The most "vocal" learner in the class may not even be able to speak in the traditional way.

Conclusions

The Internet is a powerful, flexible, and efficient tool for the delivery of instruction. It provides new ways for us to teach and learn. It allows us to do new things as well as to do traditional things in new ways. Although using the Internet to deliver instruction, store information and facilitate communication provides many ben-

efits to the instructor and student, several challenges persist. As with most paradigm shifts, there is both good news and bad news.

The Good News

The electronic mode of delivery is a good choice for a course of a specialized nature where few people in one locality might be interested in taking it at any point in time. Students in the adaptive technology distance learning course have participated from throughout the United States as well as from Canada, Italy, Germany, and Hong Kong. We do not need to be in the same place at the same time. Students can gain access to unlimited opportunities for interaction and learning without ever leaving their homes. Co-teachers and guest speakers can participate from anywhere in the world. I don't even need to cancel and reschedule a class when I am on a business trip. In fact, I often get caught up on class discussions and on grading assignments using my laptop computer and modem in the quiet of a hotel room. In addition, there is no need to make special provisions for students who have schedule conflicts for specific classes.

The Internet facilitates participation by a diverse group. Students who have taken the adaptive technology distance learning class include a mother with a baby (she worked on the class during nap times), a disabled person who has difficulty attending traditional classes, and a blind student who could access all of the course resources using his computer without requesting special accommodations from the University. In the distance learning course, I can offer students access to a wide range of resources. There has been an explosion of electronic versions of books, periodicals and other printed materials that are being made available on the Internet. Some suggest that traditional libraries will someday be largely electronic collections of books, journals and other printed materials. Distance learning instructors and students who use the Internet can make use of this vast, growing collection, perhaps mare easily than in a traditional course.

A challenge for any instructor is to ensure the active participation of all students. The Internet provides an environment that promotes the engagement of learners. Students in my class regularly make comments that they participate more in class discussions when the course is delivered electronically than they would in a traditional class. They seem to share more over the Internet perhaps because of reduced limits of time, the ability to take more time to compose comments and responses, and a sense of anonymity. They can communicate at their convenience, not necessarily at

the same time as other students, and take as much time as they wish to formulate a comment or response. And, if a student thinks of yet one more comment to make on a subject, he/she can just log on and chime in. The length of a discussion is limited only by the interest of the participants.

The Bad News

Although using the Internet provides many benefits to the instructor and student, there are also important challenges. One limitation is that potential students must have access to the Internet in order to participate in the class. Internet access is more available every day. However, while distance-learning classes have great potential for reaching those in rural areas, access to the Internet is least available in rural areas. Equal access to this technology will require the commitment and work of educational information providers and legislators to overcome financial and technical barriers. Another challenge to the instructor is to provide sufficient Internet training within the class so students can access the resources referenced without allowing technical aspects of the course to dominate course discussions. In the adaptive technology distance learning class, experience using electronic mail is required. Other standard Internet tools (e.g., distribution lists, Telnet, Gopher, World Wide Web) are used and simple explanations are given for those without previous experiences using them.

Delivering a course which typically includes in-class demonstrations is a challenge to the instructor. However, as demonstrated in the example described in this article, videotapes and on-site visits can counteract this disadvantage. And, finally, I cannot deny that something of value is lost when you give up the face-to-face interaction between instructors and students that occurs in traditional classroom instruction. There is no way to replace this aspect of instruction electronically, but the increased opportunities for interaction via electronic mail help to compensate for this disadvantage.

In conclusion, although the electronic delivery of courses is unlikely to completely replace traditional classroom instruction, this powerful option for the delivery of information and the facilitation of communication should not be ignored or underestimated by an institution of higher education.

Universal Design of Instruction

Sheryl Burgstahler, Ph.D.

Precollege and college students come from a wide variety of ethnic and racial backgrounds. For some, English is not their first language. Represented in most classes are many types of learning styles, including visual or auditory learners. In addition, increasing numbers of students with disabilities are include in regular precollege and postsecondary education courses. Their disabilities include blindness, low vision, hearing impairments, mobility impairments, learning disabilities, and health impairments.

Students want to learn and instructors share this goal. How can you design instruction to maximize the learning of all students? The field of universal design can provide a starting point for developing an inclusive model for instruction. You can apply this body of knowledge to create courses where lectures, discussions, visual aids, videotapes, printed materials, labs, and fieldwork are accessible to all students.

Universal Design

Designing any product or service involves the consideration of many factors, including aesthetics, engineering options, environmental issues, safety concerns, and cost. The design is most suitable for the average user. In contrast, universal design is the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design (*http://www.design.ncsu.edu/cud/univ_design/ud.html*). When designers apply universal design principles, their products and services meet the needs of potential users with a wide variety of characteristics. Disability is just one of many characteristics that an individual might possess. For example, one person could be five feet four inches tall, female, forty years old, a poor reader, and deaf. All of these characteristics, including her deafness, should be considered when developing a product or service she might use.

Making a product accessible to people with disabilities often benefits others. For example, sidewalk curb cuts, designed to make sidewalks and streets accessible to those using wheelchairs, are today often used by kids on skateboards, parents with baby strollers, and delivery staff with rolling carts. When television displays in noisy area of airports and restaurants are captioned, they are more accessible to people without disabilities as well as those who are deaf.

At the Center for Universal Design at North Carolina State University, a group of architects, product designers, engineers, and environ-

mental design researchers established the following set of principles of universal design to provide guidance in the design of environments, communications, and products (Connell, Jones, Mace, Mueller, Mullick, Ostroff, Sanford, Steinfeld, Story, & Vanderheiden, 1997). They can be applied to academic programs and instruction.

1. Equitable Use. The design is useful and marketable to people with diverse abilities. For example, a Web site that is designed so that it is accessible to everyone, including people who are blind, employs this principle.

2. Flexibility in Use. The design accommodates a wide range of individual preferences and abilities. An example is a museum that allows a visitor to choose to read or listen to the description of the contents of a display case.

3. Simple and Intuitive Use. Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level. Science lab equipment with control buttons that are clear and intuitive is a good example of an application of this principle.

4. Perceptible Information. The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities. An example of this principle not being employed is when television programming is projected in noisy public areas like academic conference exhibits without captioning.

5. Tolerance for Error. The design minimizes hazards and the adverse consequences of accidental or unintended actions. An example of a product applying this principle is an educational software program that provides guidance when the user makes an inappropriate selection.

6. Low Physical Effort. The design can be used efficiently and comfortably, and with a minimum of fatigue. For example, doors that are easy to open by people with a wide variety of physical characteristics demonstrate the application of this principle.

7. Size and Space for Approach and Use. Appropriate size and space is provided for approach, reach, manipulation, and use regardless of the user's body size, posture, or mobility. A science lab work area designed for use by students with a wide variety of physical characteristics and abilities is an example of employing this principle.

Universal Design of Instruction

Universal design principles can be applied to many products and services. Following is a definition of universal design of instruction:

In terms of learning, universal design means the design of instructional materials and activities that makes the learning goals achievable by individuals with wide differences in their abilities to see, hear, speak, move, read, write, under-

stand English, attend, organize, engage, and remember. Universal design for learning is achieved by means of flexible curricular materials and activities that provide alternatives for students with differing abilities. These alternatives are built into the instructional design and operating systems of educational materials-they are not added on after-the-fact. (Council for Exceptional Children p. 2)

Universal design principles can apply to lectures, classroom discussions, group work, handouts, Web-based instruction, labs, field work, and other academic activities. Listed below are examples of instructional methods that employ principles of universal design. They make course content and activities accessible to people with a wide range of abilities, disabilities, ethnic backgrounds, language skills, and learning styles.

1. Inclusiveness. Create a classroom environment that respects and values diversity. Put a statement on your syllabus inviting students to meet with you to discuss disability-related accommodations and other special learning needs. Avoid segregating or stigmatizing any student. Respect the privacy of all students.

2. Physical Access. Assure that classrooms, labs, and field work are accessible to individuals with a wide range of physical abilities and disabilities. Make sure equipment and activities minimize sustained physical effort, provide options for operation, and accommodate right- and left-handed students as well as those with limited physical abilities. Assure the safety of all students.

3. Delivery Methods. Alternate delivery methods, including lecture, discussion, hands-on activities, Internet-based interaction, and field work. Make sure each is accessible to students with a wide range of abilities, disabilities, interests, and previous experience. Face the class and speak clearly in an environment that is comfortable and free from distractions. Use multiple modes to deliver content. Provide printed materials that summarize content delivered orally.

4. Information Access. Use captioned videotapes. Provide printed materials in electronic format. Provide text descriptions of graphics presented on Web pages. Provide printed materials early to allow students to prepare for the topic to be presented. Create printed and Web-based materials in simple, intuitive, and consistent formats. Arrange content in order of importance.

5. Interaction. Encourage different ways for students to interact with each other and with you. These methods may include in-class questions and discussion, group work, and Internet-based communications. Strive to make them accessible to everyone, without accommodation.

6. Feedback. Provide effective prompting during an activity and feedback after the assignment is complete.

7. Demonstration of Knowledge. Provide multiple ways for students to demonstrate knowledge. For example, besides traditional tests and papers, consider group work, demonstrations, portfolios, and presentations as options for demonstrating knowledge.

Employing universal design principles in instruction does not eliminate the need for specific accommodations for students with disabilities. For example, you may need to provide a sign language interpreter for a student who is deaf. However, applying universal design concepts in course planning will assure full access to the content for most students and minimize the need for specific accommodations. For example, designing Web resources in accessible format as they are developed means that no redevelopment is necessary if a blind student enrolls in the class. Letting all students have access to your class notes and assignments on an accessible Web site can eliminate the need for providing material in alternative formats. Planning ahead saves time in the long run.

Universal design can also generate unanticipated benefits for others. For example, captioning course videotapes, which provides access to deaf students, is also a benefit to students for whom English is a second language, to some students with learning disabilities, and to those watching the tape in a noisy environment. Delivering content in redundant ways can improve instruction for everyone, including students with a variety of learning styles.

Employing universal design principles in everything we do makes a more accessible world for all of us. It minimizes the need to alter it for anyone.

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Resources

Center for Applied Special Technology (CAST)
http://www.cast.org/bobby/

The Center for Universal Design
http://www.design.ncsu.edu/cud/

IDEA Center
http://www.ap.buffalo.edu/~idea/BrightIDEA/

The Lighthouse
http://www.lighthouse.org/

National Center for Accessible Media (NCAM)
http://main.wgbh.org/wgbh/pages/ncam/

National Center on Dissemination of Disability Research
http://www.ncddr.org/rpp/emp/empdw/index.html

Recordings for the Blind and Dyslexic
http://www.rfbd.org/

Trace Research and Development Center
http://www.trace.wisc.edu/world/

Web Accessibility Initiative, World Wide Web Consortium
http://www.w3.org/WAI/

WebABLE
http://www.webable.com/

WGBH/Descriptive Video Service
http://main.wgbh.org/wgbh/access/dvs/

About DO-IT

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Whelley
Discussion Questions

1. What is the difference between a "medical" and "social" model of services for people with disabilities? What would be the specific attributes of a post-secondary educational support system that was socially versus medically-based?

2. What are the strategies that the professional who is providing services to individuals with disabilities can use to determine the line between being overly supportive versus not supportive enough?

3. How is the transition to employment, including the perception of that transition, different for a student with a disability versus for a student without a disability?

4. What are the characteristics of a "capable" self-advocate?

Current Challenges to Successfully Supporting and/or Accommodating the Desires and Needs of Youth with Disabilities in Postsecondary Education to Employment

Teresa Whelley, Ed.D

The Development of Postsecondary Educational Supports

Access to postsecondary education is critical for persons with disabilities to obtain quality employment and to improve their standards for lifelong living. A clear positive relationship between disability, level of education and adult employment has been firmly established (Blackorby &Wagner, 1996; Gilson, 1996: Reis, Neu, and McGuire, 1997). Employment rates for persons with disabilities demonstrate a stronger positive correlation between level of education and rate of employment than we see in statistical trends for the general population (Stodden, 1998).

The importance of postsecondary education for subsequent quality employment and lifelong living is reflected in postsecondary education attendance data. Educational, legislative and social changes have led to an increase in the numbers of students with disabilities attending institutions of higher education (Blackorby & Wagner 1996; Digest of Educational Statistics, 1996; Stodden 1998).). The most recent report by the National Council on Disability (2000) reveals that as many as 17% of all students in postsecondary education in the United States identify themselves as a student with disabilities. And since 1973, the population of students with disabilities is changing and shows a decrease in the number of students with orthopedic disabilities and a related increase in the number of students with learning disabilities (Sergent, Carter, Sedlacek & Scales, 1988). Changes have dictated the development of supports and personnel in areas related to cognitive supports, as well as the improvement of physical access (McGuire, Norlander & Shaw, 1990). Working with students with learning disabilities has been a challenge to postsecondary faculty, administrators and disability support personnel.

Supports and services for students with disabilities in postsecondary education have developed as a result of legislation, specifically the Individuals with Disabilities Education Act (IDEA, 1990) [previously known as the Education for All Handicapped Children Act, 1975]; the Americans with Disabilities Act of 1990; and Section 504 of the Rehabilitation Acts of 1973. As a result, wide range and variety of supports and services have developed in postsecondary education

(Sergent, et al, 1988). Initially, programs for students with disabilities were decentralized and housed in a variety of locations on campus: where ever space was available: Health Services Offices, Civil Rights Offices, Student Services Offices, and Learning Support Centers. By the end of the 1980s only a limited range of supports and services was available to students with disabilities in postsecondary education programs (Dukes & Shaw, 1998; Sergent, et al, 1998). In ten years there have been significant changes in the numbers of students with disabilities and complexity of their supports (Dukes & Shaw, 1998) and support activities have not kept pace.

The Nature of Current Supports and Challenges in Postseconday Education

Although there are inconsistencies in quantity and quality, educational supports and services for students with disabilities are available at most of the nations' 3,000 postsecondary institutions. The dramatic increase in the number of persons with disabilities seeking to access postsecondary education is accompanied by an increase in the type and frequency of educational supports and services offered in postsecondary education (Fichten , Goodrick, Tagalaskis, Amsel, & Libman,1990; Gartin, Rumrill, & Serebrini, 1996; McGuire, et al., 1990). However, the provision and use of postsecondary educational supports and services are rarely grounded in theory or documented by empirical data (McGuire et al., 1990). As a result, little is known about the effectiveness of postsecondary educational supports, particularly if we consider the diversity of disabilities and of postsecondary programs (Liebert, Lutsky, & Gottlieb, 1990). The situation is further complicated by a lack of consensus about how to define and measure "successful" outcomes of educational support provision.

In response to the need for theory and empirical data, the National Center for the Study of Postsecondary Educational Supports (NCSPES) was founded in 1998. Evolving from an initial exploratory phase, a research agenda was formed to include four topic areas: transition to postsecondary education, supports and accommodations within postsecondary education, coordination of supports in postsecondary education and transition to employment and lifelong learning.

Transition to Postsecondary Education

"Students with disabilities graduating from high school move from a protective environment in which school personnel are legally responsible for identifying and providing appropriate services under the IDEA to an environment in which the students are expected to self-identify as a person with a disability and request specific accommodations under Section 504 and the Americans with

Disabilities Act (ADA) (Gartin, Rumrill, & Serebreni, 1996, p. 33)." Postsecondary institutions are required by law to provide any reasonable accommodation that may be necessary for those persons with an identified disability to have equal access to the educational opportunities and services available to non-disabled peers, if requested" (Pierangelo & Crane, 1997, p. 156). It is the student's responsibility to inform postsecondary officials of their disability, provide documentation of the disability, and propose viable options for meeting the unique accommodation needs specific to their disability, thus linking their disability to accommodations (Gartin, et al., 1996; Gilson, 1996; Milani, 1996; Reis,et al., 1997). Thus, self-advocacy and self-determination—the abilities to understand and express one's needs and to make informed decisions based upon those needs— are considered to be some of the most important skills for students with disabilities to have before entering into their postsecondary experience (Battle, Dickens-Wright, & Murphy, 1998; Benz, Doren, & Yovanoff, 1998; Dale, 1995; Deshler, Ellis, & Lenz, 1996; Miller, 1995; Rusch & Chadsey, 1998; Skinner, 1998; Wehmeyer & Schwartz, 1998).

Academically, there are striking differences between the secondary and postsecondary experience. Postsecondary students find decreases in contact among teachers and students, increases in academic competition, changes in student support networks, and a greater expectation that students will achieve, as compared to secondary education (Gajar, 1992,1998; Deshler, et al., 1996; Reis, et al., 1997; NCSPES, 2000a).

Supports Within Postsecondary Education

Postsecondary educational services, supports, and programs available to students with disabilities: (a) vary extensively across states as well as campus-to-campus; (b) are generally not well developed programmatically, and (c) tend to lean toward advocacy, informational services, or remediation of content rather than training in the compensatory areas necessary for independent learning and self-reliance (Gajar, 1992, 1998; Deshler, Ellis, & Lenz, 1996; Reis et al., 1997; NCSPES, 2000a). The National Survey of Educational Support Provision to Students with Disabilities in Postsecondary Education Settings (2000a) identified the educational supports most commonly offered in postsecondary institutions/ programs: (a) note takers, (b) personal counseling, and (c) advocacy assistance. However, in a national focus group project (NCSPES, 2000b), students with disabilities stated that the type and timing of advocacy assistance provided in postsecondary education was problematic. These

respondents requested that more focus be placed upon the development of self-advocacy skills rather than employing others to provide advocacy *information to* students with disabilities. Also disappointing was that only two-thirds of the institutions surveyed offered accessible transportation while students reported that access to transportation was of critical importance to them (2000b). The National Survey creates a baseline on the types and frequency of supports and services offered but does not reflect how many students are served, their satisfaction with the supports or the quality of such supports (Stodden, Whelley, Harding & Chang, 2001).

Coordination of Supports

Students in postsecondary education long for a partnership between disability services on campus and university administration (2000b). Organizationally, these desires reflect the many systems and funding sources and eligibility criteria of the supports and services available in postsecondary education. Students may choose to self-identify and receive an accommodations plan from the disability support office on campus, reflecting the beliefs and practices that education is attainable by all with appropriate supports. Students may also choose to be supported by off-campus benefits. Vocational Rehabilitation (VR) is a federal program administered by the states. Until recently, VR was a medical model based upon the premise that a student would receive an intervention, be rehabilitated and then be employed. VR contracts with other providers for interventions, each with their own systems, eligibility criteria and services and supports. In some areas, VR has adapted a social-rehabilitation model in which "clients" are viewed and served in a reciprocating setting. In all VR supports, "clients" are assigned to counselors who maintain a great deal of discretion in their support provision and it's funding. Students may also receive health insurance, implying that they are ill. Finally, students may receive Social Security benefits, requiring documentation to prove that they are disabled to the point of unemployment (Hagner, 2001). The conflict among just these three systems in postsecondary education has left students confused and disempowered.

The roles of professionals and agencies in the coordination of supports in postsecondary education remain in question. Some students appreciate the encouragement of their families while others are overprotected and discouraged from pursuing a postsecondary (NCSPE, 2000b). Mixed reactions to the assistance of Vocational Rehabilitation counselors have also been reported (Institute for Community Inclusion, 2001). But students

generally appreciate disability support office personnel (NCSPE).

In the case of the individual higher education institution, less is know. Questions are being researched by NCSPSE in the areas of organizational and economic incentives and disincentives provided by supporting agencies in postsecondary education.

Transition to Employment and Lifelong Learning

The most obvious outcome of postsecondary education is the attainment of high-level employment and the accompanying increase in quality of life. However, according to students with disabilities who participated in national focus groups (NCSPES, 2000b), there is an overall fear of their transition to employment, including such concerns as workplace discrimination, being poorly prepared, and being denied the necessary accommodations to perform (NCSPES, 2000b).

We know that as the level of education increases for persons with disabilities, the level and quality of employment raise even more dramatically than for people without disabilities. For example, of people with disabilities, 25-64 years of age, who have not completed 12 years of school, only 16% are working or looking for work. The rate rises to 40.9% for those who have completed 12 years of school and rises again to 50.6% for those with 13 to 15 years of education (Swenson & Richard, 1999). Therefore 49.4% of people with disabilities, who have had some postsecondary education, are NOT working. The research agenda of the NCPSES has recently been expanded to include eight studies to describe and understand some of the issues involved in the transition from postsecondary education to employment.

Current Challenges to Successfully Supporting and/or Accommodating the Desires and Needs of Youth with Disabilities in Postsecondary Education to Employment

Challenge One: Ensure That Students With Disabilities in Postsecondary Education are Capable Self-Advocates and Able to Self-Determine

Secondary Education

Students with disabilities in secondary school participate in a very real environment where the locus of control is external to them. Locus of Control is important because it represents the sense of power students possess, or feel they possess, over their environment. Internal locus of control reflects that the individual feels this power internally, over his or her environment. External locus of control is just that, control that is provided by an external means (services, supports and training) in an attempt to empower students. Building an internal locus of control occurs over time, reinforced by one's ability to make perceptible differences in his/her own life and re-

warded for having achieved these differences. Once the level of control over ones environment is internalized this transition creates a foundation to promote and develop self-determination and self-advocacy skills (Shaughnessy & Yuen, 2000).

Legal mandates under IDEA 97 empower parents and school personnel with assessment and decision making rights. During the middle and high school experience, students with disabilities need to be empowered to act as causal agents towards their own future – that is, they need to be self-determined and have an internal locus of control. If students do not have the opportunity to learn how to make their own choices during secondary school, then they are at-risk to achieve poor post-school outcomes where self-determination is considered a basic skill (National Capacity Building Institute, March 2001).

According to Izzo and Lamb in their presentation earlier at this Institute, the suggested role of secondary education in fostering self-advocacy and self-determination are:

- Secondary special educators and parents must shift their efforts from supporting students to graduate from high school to preparing students for life as independent young adults.
- All team members need to revisit the IEP to determine if it leads to the exit goals students need and desire.
- Credit-bearing classes on self-determination should be offered.
- Disability awareness should be taught to students as well as diversity as a human condition.
- Self-determination skills needs to be infused into the general curricula and self-advocacy skills need to be taught.

Postsecondary Education

Stodden (2000) writes that self-determination/self-advocacy or the ability to articulate one's needs and make informed decisions about the supports necessary to meet those needs is a critical skill required of students with disabilities in postsecondary education. Self-advocacy/ self-determination skills are considered to be some of the most important skills for students with disabilities to have *before* beginning their postsecondary experience (Battle, et al., 1998; Benz, et al, 1998; Dale, 1995; Deshler, et al., 1996; Miller, 1995; Rusch & Chadsey, 1998; Skinner, 1998; Wehmeyer & Schwartz, 1998).

One of the most critical places for self-advocacy/ self-determination to take place is in the classroom, with faculty. Research finds frequent student-faculty interactions appear to have positive effects on student retention (Astin, 1977, 1993; Pascarella and Terenzini, 1991; Tinto, 1975, 1993). Tinto (1993) believes faculty provides a

primary role in shaping and communicating the educational values and standards of the institution. And faculty and students agree that open and honest communication is essential in building a positive learning environment (Izzo, 2001). But students are reluctant to self-disclose their disability to faculty due to their lack of understanding about disability or their unwillingness and/or inability to accommodate their needs. Students also fear that self-disclosure creates differential treatment in the classroom and is perceived as unfair by peers (NCSPES, 2000b). But, students who have advocated for themselves have reported a positive experience, and report that faculty may just need more information (Izzo, 2001).

Self -advocacy and self-determination training for students is also lacking at most postsecondary institutions. As found in the National Survey (2000a), advocacy is commonly offered as a support, yet students reported in the National Focus Groups (2000b) that they want to be taught the skills to self-advocate, not to be advocated for. They believe that their needs are micromanaged by service providers and some by their families.

The challenge to teach self-determination and give students a voice through self-advocacy is not only found in a lack of curricula. The ability to fully realize one's self as a person who is disabled is stunted by a distorted cultural image of disability on college campuses (Bourdieu & Passeron, 1994). Pierre Bourdieu conceptualized the term cultural capital and his belief is that certain forms of knowledge are elevated, and valued, above others. Those groups of people that possess this knowledge or cultural capital have a greater opportunity to assert their linguistic and cultural competencies and shape the norm. Historically education institutions have reflected the mainstream, which is predominately white and middle class. Bourdieu believes educational institutions serve as gatekeepers that define culture capital, and maintain the norm. Disenfranchised groups, such as ethnic minorities and, in this case students belonging to the disability culture, may lack the "cultural capital" of the dominant group. "As a result [students] may feel alienated from the college experience because their knowledge and viewpoints are not recognized, valued or celebrated" (Makuakane-Drechsel, 1999).

Suggestions for postsecondary faculty and personnel in regard to self-determination are:

- Provide self-advocacy instruction to students with disability.
- Disability support personnel need to facilitate the learning of individual advocacy skills and decrease direct advocacy.

- Faculty needs to be aware of disability issues and the legal requirements for accommodations.
- Entire campuses need to increase their capacity for diversity including disability.

Challenge Two: Ensure the Quality Delivery of Academic Material to Students with Disabilities in Postsecondary Education

Faculty

The critical point of the delivery of academic material in postsecondary education is the student-faculty relationship (Izzo, 2001). Most postsecondary faculty are not trained to teach and students report that faculty don't have a repertoire of teaching styles to adapt to different learners (NCSPES, 2000b) and faculty are generally unaware of disability issues and legalities (NCSPES, 2000a). It is logical to assume that this lack of knowledge by faculty contributes to negative attitudes regarding students with disabilities. Other barriers to the delivery of quality academic material by faculty are the lack of coordinated supports with instruction and the lack of coordinated information available to faculty on advocacy supports for students (Izzo, 2000). In this critical relationship of student and faculty, both participants need to be informed.

A study using Office of Postsecondary Education Data (Izzo, 2001), found some promising practices in professional development activities. Administrative and faculty directives consisting of notices, sponsored faculty training and distribution of information were used 33% of the time in institutions surveyed. Faculty development units were also made available across the campus. But perhaps the most striking finding was that all of the institutions surveyed used some form of technology to provide faculty training, addressing campus resources, teaching strategies and accommodations as well as universal design.

Technology Assisted Instruction

Distance education has developed from the practice of correspondence courses to the delivery of academic courses offered entirely on the web. There has been a tremendous growth in distance education and it is expected that 15% of all colleges will use it by 2002. Current distance education strategies rely on multiple media lectures and learning materials. Internet accessible learning materials, web pages and video assisted curriculum are common and available to all students (Izzo, 2001: Kim-Rupnow, 2001); technology is promoting communication, and ushering in the virtual classroom.

Distance education is expected to have a profound impact on access for students with disabilities. Simply eliminating the necessity to attend class in a traditional classroom increases ac-

cess for many who need to conserve physical energy, have limited mobility or restricted access to transportation. Current technology can deliver supports to students with disabilities who need interpreters-and /or transcribed texts almost simultaneously on the web. Faculty need training as well, here in instructional design (Izzo, 2000; Kim-Rupnow, 2001).

Best Educational Practices

In postsecondary institutions accommodations are provided according to the law (NCSPSE, 2000a), but best educational practices require more than classroom accommodations. The practices of flexible course times and audit opportunities could be made available through administrative regulation. Academic Deans &/or Department Chairs could design specialized curriculum and facilitate in the modification of curriculum to assist students in achieving their learning goals and postsecondary requirements. And all students need experiential learning opportunities built into their courses and curriculum (Simpson, 2000).

Disability Support Coordinators

Personnel who support students with disabilities in postsecondary education are part of a new and somewhat ill-defined profession. Half of the personnel have been in the field for less than 10 years (NCSPE, 2000a). But the complex demands and professional challenges are reflected in the fact that more than 80% of disability support coordinators surveyed hold at least a master's degree. About one third of the disability support coordinators have degrees in counseling or psychology while 28% have degrees in education. The remaining of those surveyed has training scattered among the arts and sciences, vocational education and related disability services (NCSPE, 2000a). The variety of educational training and range of professional preparation of disability support coordinators gives credence to the inference that this is still a new and ill-defined profession.

Professional standards and a code of ethics have been approved by AHEAD for disability support personnel, reflecting the leadership of this organization in establishing professional standards for the field. Continued leadership is needed to have these standards and codes adopted by individual-institutions of higher education and in the preparation of personnel to enter the field of disability support in higher education (Whelley, Stodden, Harding & Chuan, 2001).

Suggestion to postsecondary faculty and administrators in ensuring the delivery of quality academic material.

- Deliver and attend training sessions about disability issues. Become expert in the law, teaching strategies and campus resources.

- Have experienced technologists assist faculty in instructional design for the maximum use of technology, including distance education.
- Expand accommodations for students with disabilities beyond minimal compliance to include curricular modification and course modification as well as flexibility with course times and expand learning opportunities.
- Implement the Professional Standards and Code of Ethics of Disability Support Personnel.
- Lobby AHEAD and other professional organizations to have the appropriate accreditation boards include these standards in college accreditations.

Challenge Three: Ensure That Quality Educational Supports and Accommodations Are Delivered to Students with Disabilities in Postsecondary Education

According to the National Survey (NCSPES, 2000a), there are distinct differences in the level and types of educational supports offered to students with disabilities in postsecondary education. By grouping these types and levels of supports into categories, a comprehensive, national picture of the various types of educational supports offered to students with disabilities across a diverse range of postsecondary institutions is available (NCSPES).

Frequently Offered Supports

Testing accommodations were the educational support most frequently offered to students with disabilities in postsecondary educational settings (84% of the respondents reported that they offered this service more than 75% of the time). Educational supports commonly offered in postsecondary institutions/programs are: (a) note takers, (b) personal counseling, and (c) advocacy assistance. Half the postsecondary institutions offered learning centers and half offered job placement (NCSPES, 2000a).

Generic college-adjustment or self-improvement skills such as study, memory, communication, organization and time management skills, and meta-cognitive strategies were commonly offered across postsecondary institutions. And fairly common were organizational skill assistance, study skills and career related services (Stodden, Whelley, Harding & Chang, 2001). Peers can provide guidance and resources for information about supports and families may play a supportive role, but may be overprotective and at times discouraging (NCSPES, 2000b).

Less Frequently Offered Supports

Students with disabilities relayed more findings in a national focus group project (NCSPES, 2000b). They indicated that organization, time management skills and the coordina-

tion of supports within and across their personal, educational, and social life was a major concern often not addressed by related agencies or postsecondary institutions. Little support was given to study abroad. And less than half of the institutions surveyed offered disability specific assessment essential to begin self-advocacy, or offered accessible transport on campus, a requested support of students (NCSPES, 2000a). Of specific concern to students with disabilities (NCSPES, 2000b), is the extent to which supports provided during their postsecondary educational years will transfer to subsequent work or employment settings. Very few disability support personnel indicated that their institution offered such assistance; 54% reported that they *did not* offer such support.

Assistive Technology

Although assistive technology (AT) is available from 30% to 60% of the time, it is important to remember how important assistive technology is for students who use it; they consider it a right, not a support, indicating how essential assistive technology is for some students with disabilities (NCSPES, 2000b). Conversely, 15% to 28% of the postsecondary schools did not offer AT services at all and AT evaluations were rarely offered (NCSPES, 2000a; & Stodden et al; 2001). With 98% of people with disabilities using the Internet; improvement of the accommodations with adapted computers and adaptive equipment will improve access to postsecondary education (Kim-Rupnow, 2001). And, the National Survey (2000a) revealed that 2-year postsecondary institutions have demonstrated a higher capacity for delivering assistive technology and should be considered a model for all institutions of higher education (Stodden et al, 2001).

Policies That Directly Effect Supports and Accommodations

Few institutions have procedures for the modification of full -time status i.e. what is the number of credit hours necessary to be considered a fulltime student. There are special groups granted full-time status, for example graduate students. This status brings great benefits as in financial aid, tuition waivers, and medical insurance. Few institutions provide procedures for the modification of admission requirements. This omission gives rise to suspicion of de facto screening out of students with disabilities who may require more financial support from their postsecondary institution.

Suggestions to postsecondary administrators, faculty, and disability support personnel and researchers to ensure that quality educational supports and accommodations are delivered to students with disabilities in postsecondary education.

- Increase the commonly offered supports of note takers, personal counseling, self-improvement skills, organizational skill assistance, study skills and career related services to be offered frequently.
- Offer organization, time management skills and the coordination of supports within and across the personal, educational, and social lives of students.
- Support study abroad programs.
- Support natural networks of peers and family.
- Offer disability specific assessments.
- Offer accessible transport on campus.
- Offer Assistive Technology assessment to all students.
- Model Assistive technology supports after comprehensive supports offered in 2-year intuitions.
- Modify admission policies and full-time status policies to allow for diversity.
- Determine the effectiveness of educational supports.

Challenge Four: Ensure the Coordination of Postsecondary Supports and Accommodations

The current situation is most commonly that students with disabilities enter postsecondary education from a system where they are legally disempowered by secondary schools, IDEA and particularly by their IEP. Students most often demonstrate an external locus of control in conflict with their need to self-advocate/self-determine. They enter postsecondary education with many systems impacting on them. Students will exit postsecondary education into an even more complex and less clearly defined life. In the words of John O'Brien "Life is Messy."

Currently in postsecondary education, students with disabilities report that disability support personnel are committed and supportive people who provide guidance beyond their job description (NCSPES, 2000b). Many students find that these support people are the only personnel on campus who understand them and their learning needs and situations. Students long for a "partnership" among disability services and the administration and themselves. They are seeking a common language to describe the medical, educational and direct supports that they require (NCSPES, 2000b). Understandably, students are tired of being micro- managed and want to identify their own needs and make their own plans (NCSPES, 2000b). And faculty needs the coordination of student supports and services with faculty instruction (Izzo, 2001).

This conflict reflects the organizational models operating concurrently to support students with disabilities with conflicting funding, eligi-

bility and operating functions. What is called for is a fashion of coordinating supports that functions in postsecondary as well as prepares students for typical life. Both the Self –Determination movement in the delivery of Medicaid funded resources and Family Support programs have attempted to and in some cases met the challenges of the delivering of supports in complex environments, while maintaining flexibility, choice, consumer control and financial efficiency (Becker, Dumas, Houser & Seay, 2000; Dunst, Trivette & Deal, 1988).

Unfortunately, there is little empirical data on the organizational dynamics interacting at postsecondary institutions and their effects upon students. Currently, there are 9 studies at the NCSPES examining the elements of coordination of postsecondary educational supports. They are in the areas of: trends in VR funding, policy in distance education, the role of families in postsecondary education, transitions from 2-year to 4-year institutions, resource mapping, student initiation of supports, participant perceptions, the role of VR counselors and inclusion of students with disabilities in postsecondary education. It is anticipated that empirical as well as contextual data will be generated from these studies.

Suggestions to students, disability support coordinators, faculty, family members and secondary school personnel are assisting in coordinating educational supports in postsecondary education.

- Be knowledgeable of the laws governing postsecondary education.
- Be aware of the entry and exit criteria and operating procedures of supports programs both in postsecondary education and extramurally.
- Make personal connections with those in authority.
- Practice good self-advocacy skills.
- Use family and peers for support.

Challenge Five: Ensure That All Students Exit Postsecondary Education to Quality Employment and Living

Student with disabilities fear the transition from postsecondary education to work. They expect to be denied the accommodations that they require and expect to advocate more aggressively. They also fear workplace discrimination, being poorly paid and being ultimately denied their needed accommodations (NCSPES, 2000b). And there is anecdotal information that students, who do graduate, do not obtain the quality of life of their peers in the same professions (Stodden, personal communication, January, 2001). Unfortunately, there is diminishing assistance from the institutions of postsecondary education at the time of graduation or exit. In the National survey, 61% offered career /vocational assessments, 46% of-

fered job placement, while only 1 in 4 facilitated educational supports transition to the workplace (NCSPES, 2000a).

Again this is a new area of concern and there is little contextual or empirical data to report. There are models of support for people who need substantial and prolonged assistance (Wehman, 1992) but it is still unclear how those models will relate to a more highly educated and skilled work force. In response, the NCSPES has initiated five research studies. They are: a case study on effective supports in work settings, the internet and higher education, transition to work, quality of life and the effects of postsecondary education on work and the transfer of tech supports.

Suggestions to students, family members, disability support coordinators, faculty and, vocational rehabilitation counselors in assisting in the transition from postsecondary education.

- Use the career and planning services available on campus.
- Obtain supports from VR and/or all eligible assistance.
- Use commercial assistance in job placement.
- Practice good self- advocacy and self- determination skills.

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Current Status of Educational Support Provision to Students with Disabilities in Postsecondary Education

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Abstract

As a result of current legislation and labor market trends, the number of students with disabilities has risen to 17% of all students attending postsecondary education programs (National Council on Disability, 2000). It is well documented that students with disabilities often experience limited access to and success within postsecondary education programs, which subsequently limits their employment. Understanding the educational supports and accommodations needed by students with disabilities to progress and succeed in postsecondary programs appears to be of critical importance. To address this need, the National Center for the Study of Postsecondary Educational Supports (NCSPES) at the University of Hawaii at Manoa completed a national survey of educational support provision. The focus of this study was on the provision of targeted (types of supports & frequency of provision) educational supports for students with disabilities. Survey methods and statistical analyses were used to describe the range and nature of educational supports provided for students with disabilities. Specific areas of support provision were explored, including the role of assistive technology, special learning centers, and the transfer of supports from educational settings to employment. The findings provide a national foundation of information regarding the provision of educational supports for students with disabilities in a diverse range of postsecondary education settings.

Introduction

Federal legislation such as the Americans with Disabilities Act (ADA) of 1990 (PL 101-336), along with the reauthorized Individuals with Disabilities Education Act (IDEA) Amendments of 1997 (PL 105-17), has increased the accessibility of post-secondary education for youth with disabilities. As a result of the increased access, the number of postsecondary students reporting a disability has increased dramatically (Digest of Educational Statistics, 1996). The proportion of first-time, full-time students with disabilities attending colleges and universities tripled between 1978 and 1994 from 2.6% to 9.2% (Henderson, 1999; Lehmann, Davies, & Laurin, 2000; National Council on Disability, 2000; Petty & Kolvitz, 1996; Vogel, Leyser, Wyland & Brulle, 1999). By 1998, the full range of students with disabilities

(i.e., part-time students and students enrolled in graduate programs) had risen to 10.5% of the postsecondary student population (Gajar, 1998). And in their recently released report, the National Council on Disability (2000) revealed that as many as 17% of all students attending higher education programs in the United States are now identified as having disabilities. Given this new interest and participation by youth with disabilities in postsecondary education, it is important to understand the types and frequency of educational supports provided to students with disabilities in postsecondary educational programs.

Nature of Postsecondary Educational Support Provision

The differences between educational support provision in high school and postsecondary educational environments are more than cosmetic (Bursuck & Rose, 1992; Deshler, Ellis, & Lenz, 1996; Gajar, 1998). "Students with disabilities graduating from high school move from a protective environment in which school personnel are legally responsible for identifying and providing appropriate services under the IDEA to an environment in which the students are expected to self-identify as a person with a disability and request specific accommodations under Section 504 and the Americans with Disabilities Act (ADA)" (Gartin, Rumrill, & Serebreni, 1996, p. 33).

Under Section II and Section III of the ADA, postsecondary institutions "are required by law to provide any reasonable accommodation that may be necessary for those persons with an identified disability to have equal access to the educational opportunities and services available to non-disabled peers, if requested" (Pierangelo & Crane, 1997, p. 156). Unquestionably, postsecondary students with disabilities are charged with the bulk of the responsibility for initiating, designing, and ensuring their own educational accommodations (Battle, Dickens-Wright, & Murphy, 1998; Day & Edwards 1996, Gajar, 1998; Milani, 1996; Tucker, 1997). It is their responsibility to inform school officials of their disability, provide documentation of the disability, and propose viable options for meeting the unique accommodation needs specific to their disability (Gartin, Rumrill & Serebreni, 1996; Gilson, 1996; Milani, 1996; Reis, Neu, & McGuire, 1997). For students with disabilities, this means that in order to be able to access, participate and perform successfully in postsecondary education and other life-long learning programs, they must be personally responsible for acquiring and linking any accommodations they may require to their course of study (Brinkerhoff, 1994). Thus, self-advocacy/self-determination, or the ability to understand and ex-

press one's needs and to make informed decisions based upon those needs, is considered to be one of the most important skills for students with disabilities to have before beginning their postsecondary experience (Battle, Dickens-Wright, & Murphy, 1998; Benz, Doren, & Yovanoff, 1998; Dale, 1995; Deshler, Ellis, & Lenz, 1996; Miller, 1995; Rusch & Chadsey, 1998; Skinner, 1998; Wehmeyer & Schwartz, 1998).

Decreases in contact among teachers and students, increases in academic competition, changes in student support networks, and a greater expectation that students will achieve on their own, are among the differences found between postsecondary institutions and secondary institutions. Postsecondary educational services, supports, and programs available to students with disabilities: (a) vary extensively across states as well as campus-to-campus; (b) are generally not well developed programmatically, and (c) tend to lean toward advocacy, informational services, or remediation of content rather than training in the compensatory areas necessary for independent learning and self-reliance (Gajar, 1992, 1998; Deshler, Ellis, & Lenz, 1996; Reis, Neu, & McGuire, 1997; NCSPES, 2000a).

Though variable in quantity and quality, educational supports and services for students with disabilities are available at most of the nations' 3,000 postsecondary institutions. Because educational supports and services are required to meet the access mandates of Section 504 of the amended Rehabilitation Act of 1973, and more recently, Americans with Disabilities Act, postsecondary schools have had to insure that the programs they offer, including extracurricular activities, are accessible to students with disabilities. Such access and supports must be provided unless doing so would result in a fundamental alteration of the program or would result in undue financial or administrative burdens. According to a 1992 statement published by The Association on Higher Education and Disability (AHEAD), the Department of Education has yet to accept an argument for undue financial burden under Section 504.

Aligning Type/Level of Disability with Type/Intensity of Support Provision

Attributes of the individual are important variables in the provision of educational supports. The nature of an individual's disability and the level of severity of that disability will likely influence not only the specific educational supports that are needed, but also the entire support strategy. For example, students with severe cognitive functioning disabilities will need significantly different services than students who are visually impaired (Bergin & Zafft, 2000; Marks & Schnapp,

2000; Sharpe & Johnson, 2000). Students with learning disabilities, who need varying levels of support, are most successful when their level of support is tailored to meet their abilities (Getzel, Stodden, & Briel, 2000). Students with physical disabilities may profit from a barrier- free environment and a campus climate that has an attitude of disability friendliness (Wilson & Getzel, 2000). Students with sensory disabilities or other health-related disabilities might use correspondence courses offered through online instruction and distance education to facilitate their learning and conserve their physical energy for studying and other activities (Kim-Rupnow & Burke, in press). In addition, factors such as one's self-belief, level of independent thinking and action, and level of socialization are crucial to accessing supports and attaining personal goals. Individual factors such as ethnicity and cultural background may also significantly influence one's successful participation, self-advocacy, and progress in postsecondary education environments.

Status of Assistive Technology Support Provision

Access to assistive technology and other learning supports is critical to the success of students with disabilities in postsecondary education. Advances in information technology and assistive devices have had a significant impact upon persons with disabilities accessing higher education (Leutke-Stahlman, 1998). Assistive technology includes any device, "low tech" or "high tech," that enhances the capability of a person to function in his or her environment. This may be as basic as a page-turner or as involved as a computer-assisted communication device. We know that these devices and services, when implemented appropriately, can improve the physical and intellectual capabilities of individuals with disabilities (Barnett, 1993; Brown, 1990; Cunningham & Coombs, 1997; Murphy, 1991; Parette, 1998; Thompson et al., 1997). Also, students themselves find assistive technology so important that they see the lack of access to it as a "political" problem, which postsecondary educational institutions refuse to address (NCSPE, 2000b). Nonetheless, significant increases over the past two decades in the number of persons with disabilities enrolled in institutions of higher education and pursuing careers of their choice (Ludy & Blunt, 1995; McGuire, 1997) has been partially due to the use of advanced technological devices and services (Lozzaro, 1993; Ringaert, 1998).

Distance education opportunities can now be found in more than one-third of all postsecondary institutions (NCES, 1997; Kim-Rupnow, Dowrick, & Burke, 2001), which increases access to education for all students. The

development of distance education can be seen within print correspondence, TV courses, and the most current Web based course delivery formats. Courses can be interactive and use multiple media, as well as be linked to endless web-based data and information sites. In 1997 the National Center of Education Statistics (NCES) reported that 16% of postsecondary institutions targeted students with disabilities as potential candidates for distance education, especially students with impaired mobility (Child, 1989; Edward, 1988), impaired sight (Department for Education and Employment, 1997; Edwards, 1988; Ferrell, Persichitte, & Lowell, 2000; Leutke-Stahalman, 1998; Walker, 1994), impaired hearing or deafness (Edwards, 1998; Leutke-Stahlman, 1998), and/or impaired speech (Edwards, 1998; Hine, Harper, Beatie, & Arnott, 1998).

Accommodations provided for students with disabilities using distance education have followed three major technological trends in recent years (Kim-Rupnow et al., in press). First, interactive devices have evolved to be highly user-friendly, maximizing the use of home computers and the Internet and providing immediate access to materials and lectures for all users (Child, 1989; Edwards, 1988; Ferrell et al., 200; Hine et al., 1998; Leutke-Stahlman, 1998). Second is the availability of transcribed or interpreted text available through the use of advanced technology; it can now be delivered almost simultaneously to regular instruction (Ferrell et al., 2000; Haugen& King, 1995; Hine et al., 1998). The third trend is the use of multiple media by distance education to promote communication among all students (e.g., video mediated delivery systems can create virtual classrooms and the Internet can enhance classroom participation (Haugen & King, 1995; Hine et al., 1998; Leutke-Stahlman, 1998). Technological advances such as compressed video links and the Internet will make distance education the dominant form of higher education world wide in the years to come (Atieh, 1998; Dixon, 1996; Mason, 1998; Phillips, 1999).

Nature of the Problem

The dramatic increase in the number of persons with disabilities seeking to access postsecondary education is accompanied by an increase in the type and frequency of educational supports and services offered in postsecondary education (Fichten et al., 1990; Gartin, Rumrill, & Serebrini, 1996; McGuire, Norlander, & Shaw, 1990; National Organization on Disability, 1998; Swenson & Richards, 1999). However, the provision and use of postsecondary educational supports and services are rarely grounded in theory or documented by empirical data (McGuire et al.,

1990). As a result, little is known about the effectiveness of postsecondary educational supports, particularly as we consider the diversity of types of disabilities and of postsecondary programs (Liebert, Lutsky, & Gottlieb, 1990). The situation is further complicated by a lack of consensus about how to define and measure "successful" outcomes of educational support provision.

The most obvious outcome of postsecondary education is the attainment of high-level employment and the accompanying improvement in quality of life. Additionally, according to students with disabilities who participated in national focus groups (NCSPES, 2000b), students have an overall fear of their transition to employment, including such concerns as workplace discrimination, being poorly prepared, and being denied the necessary accommodations that they need to perform (NCSPES, 2000b).

We do know that when the level of education increases for persons with disabilities, the level and quality of employment raise even more dramatically than for people without disabilities. For example, for people aged 25-64 years of age who have disabilities and have not completed 12 years of school, only 16% are working or looking for work. The rate rises to 40.9% for those who have completed 12 years of school and rises again to 50.6% for those with 13 to 15 years of education (Swenson & Richards, 1999). Employment rates for persons with disabilities demonstrate a stronger positive correlation between level of education and rate of employment than has been seen in trends for the general population. In 1996, the U.S. Bureau of Census statistics indicated labor force participation rates at 75.4% for persons with less than a high school education, 84.6% for those with a diploma, 87.8% for persons with some postsecondary education and 89.7% among persons with at least four years of college.

Research Questions

The NCSPES at the University of Hawaii at Manoa conducted a survey of educational support provision across a nationally representative sample of two and four-year postsecondary educational programs, focusing upon the types and frequency of educational support offerings for students with disabilities. Specifically, the study investigated the following research questions:

- What educational supports are available to students with disabilities in a range of postsecondary educational settings? What is the nature and range of these supports?
- What technical supports and assistive devices are available to students with disabilities in postsecondary educational settings?

Method

A survey instrument was developed, piloted, and distributed to a national sample of more than 1500 disability support coordinators working in a range of postsecondary educational institutions. The survey was provided on a voluntary basis and individual responses were treated with strict confidentiality. Respondents were informed that their participation could have an impact on future national policy and practice decisions. Of the 1500 surveys distributed, 650 (43%) respondents completed and returned the survey.

Survey Content and Development

Content for the survey questions was generated through a national workgroup of researchers who are members of a consortium of four universities comprising the NCSPES. The workgroup consisted of a representative mix of research personnel, including persons with disabilities, persons working in rehabilitation services, postsecondary educational support personnel, and individuals with expertise in the development of national surveys.

The questions generated during this preliminary step of survey development were constructed into a pilot study conducted with a sample of 20 disability support coordinators at both 2-year and 4-year institutions of higher education in the State of Hawaii. The pilot study provided feedback regarding question content and wording clarification, as well as suggestions for item addition and removal.

Based on the pilot study feedback, an eight-page survey was developed that took respondents approximately 45 minutes to complete. Survey content was structured around clusters of the following topics:

— Institution's capacity to offer supports or accommodations

— Number of students who receive support by disability type

— Availability of technological assistance

— Outreach programs available to students with disabilities

— Funding and specialized staff issues that affect students with disabilities

— Written policies regarding disability support provision

— Information about the respondent (disability support providers)

Survey Sample and Distribution

The survey was distributed nationally via two methods. The first method involved the participation of a partnering organization, the Association on Higher Education and Disabilities (AHEAD). The AHEAD membership list was composed of disability service coordinators of both public and private postsecondary institutions,

as well as two-year and four-year institutions. A total of 750 copies (alternate formats were made available) of the survey were sent to randomly select AHEAD members across the United States. To address any bias issues surrounding AHEAD membership, a second list of non-AHEAD participants was generated from a randomized, regionally stratified list of postsecondary institutions selected from the 1995 Integrated Postsecondary Education Data System (IPEDS) CD ROM database, which is maintained by the National Center for Educational Statistics (NCES), U.S. Department of Education. The IPEDS sampling framework included data on 3,000 postsecondary education programs.

Following the first two rounds of sample selection, a sub-sample of ethnic minority institutions was added to the list to ensure their inclusion within the survey sample (i.e., 15 historically black institutions and 15 Native American institutions), for a total of 780 institutions within the IPEDS sampling framework. The survey, in alternative formats, was sent to these institutions.

Respondents from the sampling process consisted of 465 AHEAD members, 62% of those surveyed, and 184 non-AHEAD members, or 24% of those surveyed. The respondents were further profiled as follows: 422 were from public institutions vs. 193 from private institutions; 246 were from two-year or less than two-year institutions vs. 369 from four-year institutions.

Data Analysis

Analysis of the survey was conducted using the SPSS Data Analysis System. Descriptive statistics were preformed on each question and summarized using frequency counts and percentages.

Results

Types and Frequency of Educational Support Offerings in Postsecondary Programs

Because little documentation was previously available regarding the practice of offering or providing educational supports and services for students with disabilities at the postsecondary level, the research team sought to provide such information. Addressing the first research question, "What are the types of educational supports and accommodations provided to students with disabilities in postsecondary programs?" respondents were asked in Question #1, "What is the capacity of your institution to offer the following supports or accommodations as needed by students with disabilities?" For question one, thirty-four sub-items, each referencing a specific type of support, were structured within an ordinal-scale format. Respondents were asked to indicate how often during a calendar school year, indicated by % of time, their institution offered each of thirty-four

different supports or accommodations. Respondents were provided with the following scale to report how each support/accommodation is offered within their overall programs of study:

Types of Supports Frequency Count

0 = not offered

1 = offered less than 25% of time

2 = offered 25-50% of time

3 = offered 51-75% of time

4 = offered more than 75% of time

Frequency of Specific Educational Support Provision

Following is a summary of specific data found on table 1:

- Supports offered to students with disabilities most often in postsecondary educational settings were test accommodation. 84% responded that their institution offered that support or service more than 75% of the time.

- More commonly offered educational supports were (1) note takers; (67% indicated that note taking was a support offered more than 75% of the time), (2) personal counseling; 69% indicated that counseling was offered more than 75% of the time; (3) advocacy assistance; 69% indicated that advocacy assistance was offered more than 75% of the time.

- Offerings of related types of supports was fairly common across all types of postsecondary institutions; (1) organization skill assistance; 61% indicated that organizational skill development activities were offered more than 75% of the time; (2) study skills programs; 59% indicated that study skill assistance or training was offered more than 75% of the time.

- Offerings of career related supports was fairly common (it is not known whether such supports were part of university-wide career placement offices or were provided by disability support staff) in postsecondary programs: (1) 61% offered career assessment services more than 75% of the time; 46% offered job placement services more than 75% of the time.

- Very few disability support personnel indicated that their institutions were aware of or offered assistance in transferring supports to subsequent work or employment; 54% indicated that they offered these supports less than 25% of the time, whereas only 13% indicated that they offered this support more than 75% of the time.

- Disability specific scholarships are rarely offered to students with disabilities in postsecondary programs, with 54% of institutions reporting they do not offer such scholarships, and only 21% reporting that they offer disability specific scholarships 75% of the time.

- More than 50% of the responding institutions did not offer disability specific assessments or evaluations.

- Supports for study abroad are rarely offered to students with disabilities; with 63% of institutions reporting that they do

Table 1: Frequency of provision of different types of educational supports

(Percentages: based on 650 respondents)

	not offered	offered less than 25% of the time	offered 25% to 50% of the time	offered 51% to 75% of the time	offered more than 75% of the time
Summer orientation programs for students with disabilities	57.4%	9.2%	2.9%	3.8%	26.6%
Priority registration/course scheduling	23.5%	11.7%	5.1%	5.7%	54.0%
Class relocation	16.0%	14.8%	5.7%	11.1%	52.5%
Testing accommodations	4.3%	3.4%	1.8%	6.2%	84.3%
Disability-specific scholarships	59.2%	20.8%	6.6%	3.7%	9.7%
Disability-specific assessment/evaluation	53.7%	11.5%	6.5%	6.8%	21.5%
Advocacy	9.2%	6.2%	5.4%	10.9%	68.3%
Supports for study abroad	63.1%	14.8%	4.2%	4.3%	13.7%
Learning center laboratory	26.6%	5.1%	7.8%	9.7%	50.8%
Special learning strategies	12.8%	10.8%	15.2%	15.5%	45.7%
Developmental/remedial instruction	27.7%	9.7%	7.7%	8.5%	46.5%
Personal counseling	7.1%	5.1%	8.5%	10.9%	68.5%
Accessible transport on campus	57.4%	6.2%	4.5%	5.1%	26.9%
Interpretor/transliterator	19.5%	11.4%	5.5%	6.5%	57.1%
Notetakers/scribes/readers	9.8%	6.2%	6.6%	10.0%	67.4%
Tutors	13.7%	4.9%	10.9%	14.5%	56.0%
Real-time captioning	70.6%	8.2%	3.4%	3.1%	14.8%
Assistive technology evaluations for students	58.5%	13.8%	6.6%	4.8%	16.3%
Skills training on equipment/software	28.5%	16.2%	14.6%	10.5%	30.3%
Equipment or software provision (loan/lease/purchase)	34.6%	15.5%	11.5%	12.3%	26.0%
AT supports across campus	24.5%	12.2%	14.0%	14.8%	34.6%
Adaptive furniture	22.9%	14.9%	10.9%	15.7%	35.5%
Document conversion	34.3%	13.8%	10.9%	9.7%	31.2%
Communication skills	25.8%	15.5%	13.1%	11.1%	34.5%
Study skills	9.2%	8.9%	9.7%	13.2%	58.9%
memory skills	21.5%	15.8%	13.7%	11.4%	37.5%
Meta-cognitive strategies	26.6%	15.5%	16.3%	10.2%	31.4%
Organizational and time management skills	10.8%	9.8%	10.9%	15.8%	52.6%
Self-advocacy skills	15.4%	7.5%	12.8%	16.3%	48.0%
Career/vocational assessment and counseling	10.5%	5.7%	9.8%	13.1%	60.9%

not offer supports for study abroad, and only 14% offering such support more than 75% of the time.

- Over 50% of the responding institutions did not offer accessible transport on campus for students with disabilities.
- Real-time captioning is rarely offered in postsecondary educational programs; 71% indicated that they offered real-time captioning less than 25% of the time.
- Assistive Technology (AT) evaluations for students with disabilities are rarely offered in postsecondary programs; close to 60% of the respondents offered such a service less than 25% of the time.

Discussion

Supports

The findings as illustrated in Table 1 provide a comprehensive picture of the various types of educational supports offered to students with disabilities across a diverse range of postsecondary programs. Testing accommodations was the educational support offered most frequently to students with disabilities in postsecondary educational settings (84% of the respondents reported that they offered this service more than 75% of the time). This is not surprising given the long-standing attention this issue has received in the research and popular press literature. For decades, testing accommodations for students with disabilities (as well as for students from culturally diverse backgrounds and/or with limited English proficiency) have been a contentious topic in debates concerning special education eligibility criteria, ability grouping, biases in standardized tests, standardized minimum competency tests for high school graduation, school accountability outcome measures, educational reform, and college entrance exams (Stodden & Dowrick, 2001). Disability specific scholarships and supports for study abroad were the most infrequently offered supports. This may not mean that students with disabilities are being discriminated against; rather it may be that these financial supports are rarely offered to any attendee of these postsecondary institutions.

As noted in the Results section, educational supports commonly offered in postsecondary institutions included: (a) note takers, (b) personal counseling, and (c) advocacy assistance. However, in a national focus group project (NCSPES, 2000b), students with disabilities stated that the type and timing of advocacy assistance provided in postsecondary education was problematic. These respondents requested that more focus be placed upon the development of self-advocacy skills rather than employing others to provide advocacy information to students with disabilities. Therefore, although

postsecondary institutions reported that advocacy assistance was offered, the quality of and satisfaction with that assistance was not assessed. Students with disabilities may have very different perceptions among themselves about the "advocacy" accommodations needed. Also, institutions of higher education may believe that they are providing exemplary support services that aid in recruitment and retention of students with disabilities, whereas, students with disabilities, may view the quality of services, and methods by which they are provided, as less than adequate. In the present study, most institutions offered advocacy assistance most of the time while about "half" to "a quarter" offered self-advocacy skill training most of the time. Approximately a quarter of the institutions offered self-advocacy skill training less than a 25% of the time, while only 15% offered advocacy assistance as little as 25% of the time. This reveals the overwhelming tendency for disability support coordinators to advocate for students with disabilities as opposed to teaching students to advocate for themselves. Unfortunately, less than half of the institutions offered disability related assessments. Students with disabilities need such information to understand the nature of their disability, their strengths and their limitations, so that they can advocate for their own accommodations.

Adjustment or self-improvement areas such as study, memory, communication, organization and time management skills, and meta-cognitive strategies were commonly offered within many postsecondary institutions. Sixty percent of the institutions responded that study skills assistance was offered more than 75% of the time (approximately one-third offered memory and communication skills more than 75% of the time). Half (52.6%) of the respondents reported that organization and time management assistance was offered more than 75% of the time. However, only one-third of the institutions offered meta-cognitive strategies more than 75% of the time. Students with disabilities participating in a national focus group project (NCSPES, 2000b) indicated that organization, time management skills and the coordination of supports within and across their personal, educational, and social life was a major concern often not addressed by related agencies or disability support offices in postsecondary institutions. These concerns were often a reason for dropping out of school or for not progressing at an academic pace with students without disabilities. Therefore, our finding that only half of the respondents provided consistent and frequent support (more than 75% of the time) in teaching skill areas such as study, organizational and time

management has direct implications for postsecondary institutions. As postsecondary education programs seeks to improve the recruitment, retention, and ultimate job placement success for students with disabilities, it should provide supports or courses of instruction in basic organization and time management, communication, and study skills (NCSPES, 2000b). Providing such courses would benefit students with and without disabilities, as well as improve the knowledge faculty/staff working with such students. Career-related supports were fairly common (it is not known whether such supports were part of the generic student services or provided by disability support staff) in postsecondary programs. Given that only 56% of graduates with disabilities are working as compared to 90% of non-disabled graduates, it is particularly important that students with disabilities receive career-related supports. Sixty percent offered career/vocational assessment and counseling, 46% offered job placement services and 44% offered work-study opportunities more than 75% of the time. However, of specific concern to students with disabilities, as reported in a national focus group project (NCSPES, 2000b), was the extent to which supports provided during their postsecondary educational years would transfer to subsequent work or employment settings. Very few postsecondary education disability support personnel indicated that their institution offered such assistance; 54% reported that they *did not* offer such support, 18% offered such support less than 25% of the time, and only 13% indicated they offered this support more than 75% of the time.

Assistive Technology

In answering the second research question, "To what extent is assistive technology available for students with disabilities in postsecondary programs?" findings indicated that adaptive furniture was the most frequently offered support, and real-time captioning was offered the least frequently. More than one-third of the postsecondary institutions offered adaptive furniture (35%), assistive technology supports across campus (34%), the provision of equipment of software (26%) and skills training on equipment/software (30%), and document conversion (31%) more than 75% of the time. In examining the number of schools offering AT more than half of the time, we found that 62% offered adaptive furniture, 59% offered assistive technology supports across campus, 50% offered skills training on equipment/software, 45% offered equipment or software provision, and 44% offered document conversion. Although these numbers range from 30% to 60%, it is important to remember how important assistive technology

is for students who use it. Students with disabilities in a national focus group considered assistive technology to be a "right", not a "support" (NCSPES, 2000b). Despite the importance that students with disabilities appear to place upon assistive technology, fifteen to twenty-eight percent of the responding postsecondary programs did not offer such services at all.

Interpreter/transliterator services were offered by 57% of the schools more than 75% of the time. On the other hand, real-time captioning was rarely offered. Seventy-one percent of the responding postsecondary programs indicated that they did not offer this support, and only 15% offered this support more than 75% of the time. Approximately half of the respondents (58%) indicated that their institutions did not offer assistive technology evaluations for students with disabilities, and 16% of the respondents stated that their institutions offered these evaluations more than 75% of the time. This support, like many others, has a small "middle ground." It appears that in many cases the institutions either offered the support to a wide range of students (more than 75% of the time), or did not offer it at all (See Table 1).

Conclusion

Our research team sought to establish a foundation of knowledge concerning the frequency and types of supports postsecondary programs offered to students with disabilities. The results of this study show distinctive differences in the level and types of educational supports offered to students with disabilities in postsecondary education. By grouping these types and levels of supports into categories, it was easier to identify more precisely which supports are offered on a more or less consistent basis.

In conclusion, while enrollment of students with disabilities in post-secondary education is increasing significantly, few such students are progressing and completing their program of studies at a level and within the time period of their non-disabled peers. We have identified the extent to which different types of educational supports were offered to students with disabilities across a diverse range of postsecondary educational institutions. However, these results are merely a starting point, as we can only speak to the types of supports offered, not their effectiveness or real benefit to students with disabilities in postsecondary education programs. We currently have little information on the methods used to deliver educational supports or information on stu-

dent satisfaction with such supports. Future research is needed to examine these areas to further determine the effectiveness and value of educational supports in postsecondary education.

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Implication Briefs

Findings Implication Brief

National Center for the Study of Postsecondary Educational Supports (NCSPES)
University of Hawai'i at Manoa

Issue Area: Self-determination and Self-Advocacy Skills

Author: Margo Vreeburg Izzo, Ph.D.

Summary of the Issue

Students with disabilities often experience barriers to gaining the supports and services that they need to be successful within the educational setting. Many students with disabilities are not fully aware of their strengths, limitations and needs. They have difficulty self-advocating and coordinating the necessary services and supports to accomplish their goals. Using self-management strategies, making decisions and evaluating their own performance are skills students need to successfully complete their course-of-study. These skills are often described as self-determination.

Self-determination is a combination of skills, knowledge and beliefs that enables a person to engage in goal-directed self-regulated behavior (Field, Martin, Miller, Ward, & Wehmeyer, 1998). These authors view self-determination as a process that consists of six components: self–awareness, self–advocacy, decision making, independent performance, self -evaluation and adjustment. According to Wehmeyer and Schwartz (1995) students who obtain self -determination skills while attending school have a greater chance for success than students who do not acquire these skills. Although each component of self-determination is essential for life-long success, self-advocacy is a critical skill for postsecondary students with disabilities who find themselves working with teachers who have not had the opportunity to learn about diverse teaching strategies, disabilities and accommodations. Being able to disclose a disability and present oneself in a positive light enhances students' self-esteem. Self-determined students approach sharing their personal experiences and educating others with a greater degree of self-assurance.

Study Questions/Method

The purpose of this study is to examine the postsecondary environment from the perspective of students with disabilities and the faculty who teach them. Two strategies were used: (1) a quantitative survey assessed the experiences of faculty and students across the campus, and (2) in-depth focus groups gained the perspectives of faculty, students with disabilities and students without disabilities within 3 departments. The research questions explored follow:

1. What are the college experiences of students with disabilities, including faculty members' attitudes and teaching strategies?
2. What skills and behaviors do students with disabilities need to posses to successfully navigate postsecondary environments?
3. What recommendations are suggested by students and teachers to improve the quality of the educational experience?

Survey

The primary purpose of the survey is to provide a platform for university departments/units to have "strategic planning" data gathered for their use in developing and assessing their programs. Prospective respondents were first solicited through e-mail. They were asked to click onto a website to complete the survey on-line. Reminder e-mails were sent if respondents did not reply within a three-week period. Following this web-based collection period, attempts were made to contact non-respondents by telephone. Telephone interviews were conducted during February and March, 1999. Of the 1,339 respondents, 850 persons (63%) completed the OSU Poll through the Web site and an additional 489 telephone interviews were completed.

Focus Groups

The qualitative research method of focus groups was used to explore and discover the climate of the department towards disability issues from three perspectives: faculty members and teaching assistants, students with disabilities, and students without disabilities. Focus group questions for each target audience were prepared to explore the following four areas: types of accommodations requested by students and provided by faculty and/or disability service providers; specific learning styles and teaching strategies used; experiences with students disclosing their disability and/or requesting accommodations; suggestions and recommendations for improving the quality of education within the department and across the campus. Ten focus groups were conducted with 33 students and 24 faculty.

Findings

A representative sample of 1,339 faculty and students at Ohio State University (OSU) were asked a variety of questions to assess their attitudes towards and experiences with students with disabilities.

- Almost two-thirds of the faculty respondents (62.3%) reported positive experiences with students with disabilities while less than 5% of the faculty

respondents reported negative experiences. The majority of undergraduate students (52.5%) reported neutral experiences.

- Faculty members were asked what would be most helpful to them to teach and accommodate students with disabilities. The most frequent response (31.8%) was specific information on how to handle each disability. Another relatively common answer (9.1%) was better information about available resources.
- Only 21% of the faculty reported that they do have an accommodation statement on their syllabi. Conversely, over three-quarters of the faculty respondents do not provide notice that accommodations are available for students with disabilities.

From an analysis of the focus group transcripts, the following findings were gleaned:

- Select faculty use a variety of teaching strategies such as assessing students' learning styles and teaching to the most preferred styles, publishing lecture notes on-line, and meeting with students individually to coordinate accommodations.
- Students who have advocated for themselves reported having more positive experiences. One student commented "The key to the proctor sheets is getting them in early and giving teachers time. I even sit down with them and help them fill it out. I try not to make them feel rushed." (student, personal communication, February 9, 2000).
- A number of faculty responded that they want students to advocate for themselves, as reflected in the following two comments: "To me it makes a big difference when they come to you at the beginning of the quarter and they are registered with ODS. In general, students need to be able to approach you. They also need to be an advocate for themselves" (faculty member, personal communication, February 29,2000) and another faculty commented, "I think it's primarily the students' issue. We would love to help. We are willing to cooperate, listen, and help" (faculty member, February 29, 2000)
- Many faculty and students agree that open, honest communication between students and faculty is essential to creating a positive learning climate in the classroom. Yet many students revealed that they are not comfortable disclosing they have a disability to faculty.

Implications by Audience

Many incidents occur among faculty and students that promote a positive postsecondary experience for students with disabilities. Many faculty simply need to become aware of student needs and gain the support services to provide reasonable accommodations. When students approach faculty with a clear statement of why they need certain accommodations, and the appropriate documentation to verify their accommodation (i.e. letter from ODS), then the majority of faculty willingly provide the necessary supports.

Students

- Students need to be able to communicate their strengths, limitations and the accommodations they require to navigate educational settings. They need the negotiation skills to gain the services and supports they are entitled to receive.
- A student can help teachers understand how they can help him/her learn best. Students themselves are a powerful training resource to improve the quality of education they receive.
- Students have the right to confidentiality and respect at all times.
- Students need to be in charge of creating the perception of their strengths, limitations and needs and how the postsecondary experience enhances their ability to meet career and life goals, especially when they enter classroom settings where teachers have not had students with disabilities enroll in their courses.

Educators and Transition Specialists

- School personnel have the responsibility to teach students with disabilities about their strengths, limitations and approved accommodations and supports needed to navigate the general curricula. Students must have the opportunity to practice negotiating their own accommodations prior to entering postsecondary education.
- Educators have the right to request and receive documentation that lists the approved accommodations and the support to deliver these accommodations.
- Educators have the right to receive training and support to deliver the accommodations necessary from the designated office, typically the special education department within secondary programs, and the Office for Disability Services within postsecondary programs.

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Findings Implication Brief

National Center for the Study of Postsecondary Educational Supports (NCSPES)

University of Hawai'i at Manoa

Issue Area: Promising Practice Resulting in Improved Program and Student Outcomes

Authors: Margo Vreeburg Izzo, Program Manager and Jennifer Hertzfeld, Program Associate, Collaborative Site, Nisonger Center, Ohio State University

Summary of the Issue

Results of the *National Survey of Postsecondary Educational Supports for Students with Disabilities* revealed that a wide range of supports are being offered through disability support offices in postsecondary education programs. Further findings, based upon the voices of students with disabilities who participated in a series of *National Focus Groups*, revealed that a number of factors, beyond the provision of educational supports, created barriers to their success in postsecondary education and subsequent employment. Those factors included:

- Negative attitudes and lack of knowledge by faculty members concerning the diverse attributes and needs of students with disabilities,
- Lack of coordination of supports and services with faculty instruction, related services provision and other campus activities available to all students,
- Lack of coordinated information or advocacy supports for students with disabilities

The need to improve the climate of higher education programs for students with disabilities has been the focus of a $5,000,000 demonstration grant program funded by the Office of Postsecondary Education, U.S. Department of Education. The purpose of this grant program is to provide technical assistance and professional development activities for faculty and administrators so that these individuals will assure that a quality education for students with disabilities is

available within their institution. In an effort to capture the activities of this grant program, the staff of these 21 grants submitted "promising practices" that they were implementing to improve the climate across their campuses. A matrix of promising practices was developed that describes the characteristics and intended outcomes of a variety of strategies that are being implemented across a minimum of 30 campuses nationwide

Study Questions/Method

1. What are the characteristics of promising program models being implemented by the 21 demonstration projects funded by the Office of Postsecondary Education?
2. What types of professional development activities are being implemented by the program models?
3. Who are the critical stakeholders involved in model project implementation?

During the past year the United States Department of Education, Office of Postsecondary Education (OPE) selected twenty-one postsecondary programs for funding to demonstrate innovative and promising models of faculty and institutional development, resulting in improved program and student outcomes. Each of the twenty-one funded projects was selected as a promising program model or practice, providing a potential database for study across the projects. Also, each of the project programs has the potential to generate data on the effectiveness of model or practice characteristics and to assess program and student outcomes.

A framework has been developed to describe the characteristics of promising practices underway within the twenty-one projects. Peters and Heron (1993) proposed that the following five criteria be applied to all potential best practices under consideration to ensure that these practices represent a reliable, valid and critical aspect of a program: (a) the practice is well grounded in theory: (b) the practice is supported empirically through studies that are internally and externally valid; (c) the practice has some underpinnings in existing literature; (d) the practice is associated with meaningful outcomes; and (e) the practice is socially valid. In addition, consumers validated emerging promising practices through a focus group consisting of postsecondary students with disabilities. The responses to these questions guided the selection process to assure that these promising practices are socially valid, from the perspective of key stakeholders, namely students themselves. Through the writing and review process, each practice is continually validated from the perspective of the end user. The authors applied these criteria to the practices featured in this brief.

Findings

- Project staff from the 21 demonstration projects funded by OPE submitted 63 different promising practices that are being implemented to improve the quality of postsecondary education for students with disabilities.
- These 63 promising practices were categorized into three broad areas: (1) assessing the climate of the department, college or entire institution, (2)

administrator and faculty professional development, and (3) building capacity for institutional change.

- The strategies that were most often reported to assess the climate of the 21 institutions were focus groups, surveys and advisory committees.
- Approximately 50% of the universities and colleges involved in the postsecondary grant program used focus groups to assess the climate of a department or institution.
- Of the 21 institutions involved in the postsecondary grant program, 43% used survey research techniques to obtain input from faculty and administrators regarding faculty needs and preferred training formats.
- Of the 21 institutions involved in the postsecondary grant program, 15% reported using advisory committees and forums to discuss issues regarding the quality of education for students with disabilities.
- Approximately 20% of postsecondary grant programs provided self-advocacy instruction and support. Once students have the skills to understand and disclose their disability and needed accommodations, then students themselves can increase faculty awareness and cooperation.
- All 21 projects (100%) have been using some form of technology to provide faculty training on a variety of topics. These topics include, but are not limited to: Universal Instructional Design, accommodations, adaptive equipment, campus resources, and teaching strategies for instructing students with disabilities.
- Nine of the 21 projects (43%) are infusing distance education into their professional development activities.
- Approximately 50% of the projects are including accessible web design activities into their work. Furthermore, five (24%) of the projects have created centers existing only to train and educate people in development of accessible web pages, distance education courses and on-line course segments.
- Administrative and faculty directives, informing faculty of policies and institutional practices, is being used by seven (33%) of the projects. Activities encompassed in administrative and faculty directives include (a) written notices sent yearly from the Provost's office describing the university's commitment to diversity (b) faculty training sponsored by the Provost's office (c) and distribution of an informational package to all faculty.
- The majority of the 21 projects involve other faculty development units across their campuses, in addition to disability services providers. By collaborating with potential users and supporters, project staff and faculty have an increased awareness of issues related to accommodating students with disabilities.

Implications

- Need to identify the relationship between promising program characteristics, as determined effective, and improvements in intermediate program outcomes, such as levels of faculty attitudes and knowledge, levels of support/accommodation coordination with related services, and others.

- Need to explore the relationship between assessed intermediate program outcomes and the improvement of ultimate student outcomes, such as program satisfaction, grades, graduation rates, and subsequent employment.
- Need to determine the effectiveness of self-advocacy on student outcomes, such as grades, graduation rates, and subsequent employment.
- Need to involve many different partners across the postsecondary institution that focus on faculty and student development.

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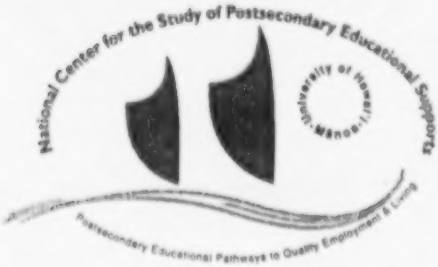
Findings Implication Brief

National Center for the Study of Postsecondary Educational Supports (NCSPES)

University of Hawai'i at Manoa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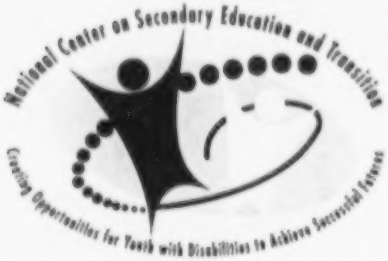
University of Hawai'i at Manoa
Postsecondary Educational Pathways to Quality Employment & Living


National Center on Secondary Education and Transition
Creating Opportunities for Youth with Disabilities to Achieve Successful Futures

Issue Area: Self-determination and self-advocacy strategies are now being positioned within postsecondary settings in an attempt to increase the number of students with disabilities who attend colleges and universities and improve graduation rates. Researchers suggest using self-determination curriculum as a cultural empowerment strategy to enable students with disabilities to persist in a postsecondary education, and graduate with a degree.

Authors: Brian Shaughnessy, J.D. and JoAnn W.L. Yuen, Ed.D. University of Hawaii, Manoa, CDS, RRTC

Summary of the Issue

Secondary students with disabilities

- Continue to lag behind their non-disabled counterparts in education and employment;
- Have poor post-school outcomes. An average of 22% of all students with disabilities drop out of school compared to only 12% of their peers without disabilities (Benz & Halpern, 1987);
- Lack the variety, frequency and latitude of learning opportunities that allow them to experiment with behavioral options (Ward and Kohler, 1996, p. 288).
- In postsecondary education, while improving, are still 50 percent lower than that of the general population (Stodden and Dowrick, 2000; OSEP, 1992).

Education and support strategies

- Have failed to produce coordinated and integrated improvements that accommodate and support students with disabilities in learning rigorous, standards-based curriculum (Berliner & Biddle, 1996; Edgar, 1997; Hatch, 1998; USDOE, 1995, 1996; Waldron & McLeskey, 1998)
- Have been unable to integrate students with varying abilities into core high school academic programs have been hindered: by a shortage of financial and professional resources; and an inadequate research base (Jorgensen, 1997; Oakes & Wells, 1998; Vaughn, Schumm, & Brick, 1998).

Study Questions/Method

1. What skills do students with disabilities need to possess to successfully advocate for their own educational supports and subsequent workforce settings?
2. What skills do students with disabilities need to possess to develop internal locus of control and increase cultural capital in postsecondary settings?
3. What is the impact of a locus of control/cultural capital intervention during postsecondary education upon the development of individual empowerment and self- advocacy skills in students with disabilities?

Qualitative Instruments

The qualitative method will also be used to understand the effect of the intervention—self-determination curriculum by listening to the voices of students with disabilities. Case studies will be used in conjunction with life course charting.

Quantitative Instruments

Two quantitative instrument will be used, a "self-awareness instrument" and an "internal locus of control assessment".

Findings

Assisting students with disabilities in postsecondary education involves more than implementing a curriculum. Four responses are needed to effect positive outcomes: implement a curriculum that supports student with disabilities; faculty become the important link between the student and the institution, improve the range of related supports and services; and develop a seamless system of coordinated support that originates within the classroom.

Develop a curriculum designed to fit existing courses and established curricula with the tools and teaching strategies necessary to enhance a student's self-determination and self-advocacy skills

- Self-determination and self-advocacy strategies need to become mainstreamed and communicate perspectives in prime time campus venues.
- As students with disabilities transition out of secondary education it is important to continue to increase the variety, frequency and latitude of learning opportunities to reinforce the concept of self-determination and self-advocacy and enable students to continue to create successes in their lives.
- Include choice and control in programming for students with cognitive and developmental disabilities. Provide unsheltered settings so students with disabilities can experience success in competitive and natural environments.

Teach using a philosophy that celebrates the disability culture and knowledge, promoted by faculty [across departments] who are empowered to support a student's sense of worth and academic ability and strengthen a student's sense of control over their environment

- Faculty are the primary agents to build student involvement. In order for these students to get involved in the college and university community, the involvement may have to begin and be sustained in the classroom.
- Students who feel valued by their institution may have a stronger commitment to the institution and graduation than individuals who do not feel valued. Non-traditional students, in particular, need someone to take the initiative and reach out to engage them.
- Frequent student-faculty interactions appear to have positive effects on student retention.
- The classroom becomes the common ground for all students, academic learning may open doors to social integration and integration is one key to retention and graduation.

Develop related services and supports available on campus for students with disabilities

- Unlike secondary students who are identified as having a disability, postsecondary students can remain invisible on a campus. It is necessary to have a range of service options available to serve a student population that is hard to reach and may not know how to reach out.
- Non-traditional students appear to expect institutions to take the initiative in assisting them. In order to support postsecondary students, institutions need a range of supports—reinforced through services, curricula, and pedagogy—designed to reach out to, engage and teach students with disabilities.

Create a seamless system of coordinated services

- The University of Hawaii (UH) does not have special admission policies to assist in the recruitment and retention of students and support services. The retention and persistence of students needs to become a campus-wide priority and backed by the institution with a funding commitment.
- Service support mechanisms exist on college campuses and programs may appear at-odds or uncoordinated because they compete among themselves for limited funds. It is critical for students to have a range of supports at their disposal—supports that appear seamless and reinforce each other efforts.

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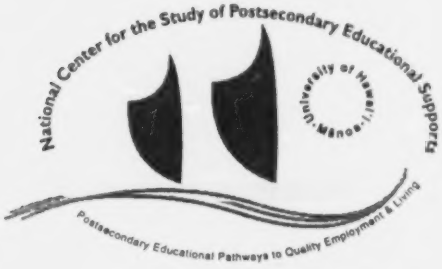
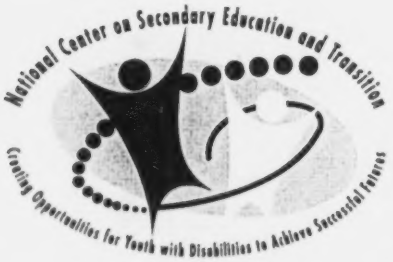
Findings Implication Brief

National Center for the Study of Postsecondary Educational Supports (NCSPES)

University of Hawai'i at Manoa


National Center for the Study of Postsecondary Educational Supports
University of Hawai'i at Manoa
Postsecondary Educational Pathways to Quality Employment & Living

Issue Area: A 20/20 Analysis of Postsecondary Support Characteristics


National Center on Secondary Education and Transition
Creating Opportunities for Youth with Disabilities to Achieve Successful Futures

Authors: Michael N.Sharpe, David R.Johnson

Summary of the Issue

The objective of this research effort, *A 20/20 Analysis of Postsecondary Support Characteristics,* is to provide information about the range of support options available to students with disabilities in postsecondary institutions nationwide. Representing Year I of a three-year study, *Longitudinal Analysis of the Experiences of Students with Disabilities with Postsecondary Support Service Systems: Characteristics of Effective Support Systems*, the overall goal of this research is to identify effective components of support services in relation to student outcomes. To accomplish this task, two basic research strategies either will be, or have been, employed: (1) an examination of student outcomes by conducting a "20/20" analysis of support service characteristics, and (2) an examination of input and process variables that lead to the identification of effective components of support services. A 20/20 analysis approach is utilized in the current study to describe the range of support options (e.g., "capacity") available within various types of institutions (e.g., 2 year, 4 year) and the extent to which supports systematically vary as a function of institution type.

Study Questions/Method

Three main questions are to be addressed in the longitudinal study:

1. How does support service capacity impact consumer perceptions of access, satisfaction, and anticipated postschool outcomes?

2. What characteristics of postsecondary support service capacity that are most likely to result in high levels of consumer access, satisfaction, and positive perceptions of postschool outcomes? And
3. What aspects of support service capacity are considered most effective in terms of carryover to subsequent employment?

In a *20/20 Analysis of Postsecondary Support Characteristics*, we have selected a sample of the Top 20%" and the Bottom 20% of institutions representing high and low levels of support services based on "capacity" ratings obtained from data collected through the *NCSPES 1999 National Survey of Post-Secondary Educational Support for Students with Disabilities*. A method used initially by Reynolds (1993) to examine characteristics of high and low academic achievers, 20/20 analysis is applicable to a wide range of phenomena, including the study institutional characteristics. The objective of this approach is to "look at the margins" to study differences between the "Top" and "Bottom" 20% of a institutional sample to identify key variables which may account for differences in service capacity and eventually, consumer satisfaction and outcomes.

Implications by Audience

While tentative at this point, students with disabilities and those who provide them with secondary transition services need to consider the type of institution students will be entering as they continue their postsecondary studies. In general, public 4-year and 2-year postsecondary institutions tend to demonstrate greater levels of capacity and hence, are more likely to provide testing accommodations, note takers, tutors, career counseling, vocational assessment services and the like. While a number of private, nonprofit 4-year and 2-year institutions offer similar services, these generally tend to be more variable and limited in scope. As such, it is incumbent upon students and those who serve them develop a knowledge base about the level of services available to facilitate the transition to postsecondary education. The next phase of this study will examine issues of consumer access, level of satisfaction, and perspectives in an effort to ascertain the general relationship of capacity to outcomes for students—e.g., "Does more capacity necessarily mean better outcomes for students?"

Findings

Initial findings indicate that the Top 20% group (N=139) obtained average "capacity" ratings about one standard deviation above the overall average. In contrast, the capacity ratings of the Bottom 20% were found to be well below this threshold. Less variability was observed in the Top 20% group, suggesting that these institutions tend to be more "consistent" with regard to the range of services provided to students with disabilities, while the Bottom 20% (N=140) appears to be more variable in this regard. This finding was generally repeated when the initial sample was partitioned into groups based on other institution "types." That is, similar results were observed whether the analysis was conducted with only 4-Year or 2-Year institutions, public or private, or profit or nonprofit. To a large extent, the results of the 20/20 analysis magnify the findings of the National Center for Education Statistics in the report, *An Institutional Perspective on Student with Disabilities in Postsecondary Education* (U.S.

Department of Education, 1999). That is, public institutions in general more likely to provide more services to students with disabilities and large public institutions in particular are more likely to demonstrate greater overall capacity. Although preliminary at this point, there appears to be some evidence that greater levels of "capacity" (i.e., range of service options provided to students with disabilities) may not always be reflected in lower staff-to-student ratios for all institutional types. That is, on average, public 4-year institutions tend to have higher staff-to-student ratios than public 2-year or non-profit 4-year institutions. Follow-up analysis is currently being conducted to examine this issue more closely.

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Any comments or ideas regarding this study are welcome.

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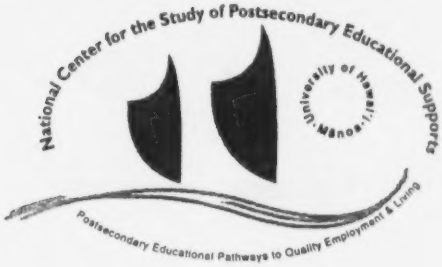
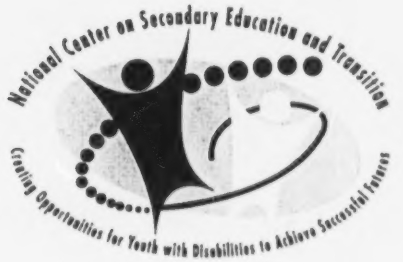
Findings Implication Brief

National Center for the Study of Postsecondary Educational Supports (NCSPES)

University of Hawai'i at Manoa


National Center for the Study of Postsecondary Educational Supports
University of Hawai'i at Manoa
Postsecondary Educational Pathways to Quality Employment & Living

Issue Area: Effective instructional strategies for students with learning disabilities in postsecondary education


National Center on Secondary Education and Transition
Creating Opportunities for Youth with Disabilities to Achieve Successful Futures

Authors: Getzel, E.E., Wehman, P., & McManus, M.S.

Summary of the Issue

Although there has been an increase in the number of students with learning disabilities entering colleges and universities, limited numbers of students are completing their programs (Wille-Gregory, Graham, & Hughes, 1995). There are several factors that contribute to low retention and completion rates (Aune, 1991) which make it exceedingly challenging for these individuals to complete postsecondary educational programs. In many instances, students may be hampered by varying or limited support services, large student-instructor ratios, and limited direct student-instructor contact which results in insufficient individualized attention (Stodden, 1999). Additionally, students with learning disabilities in higher education settings often face obstacles in the form of negative or prejudicial attitudes held by faculty members, administrators, and other members of the student body (Greenbaum, Graham, & Scales, 1995; West, et al., 1993).

To help students with learning disabilities participate in higher education programs, three primary considerations emerge: obtaining detailed information on the unique characteristics of the students, developing specific educational interventions based on the students' characteristics, and providing information and support to students on effective educational strategies. In an effort to ensure that these areas are fully addressed at VCU, an Educational Intervention Model for students with learning disabilities has been developed.

Study Questions/Method

1. What is the range of educational supports needed by students with learning disabilities to successfully complete their postsecondary education program?
2. What are the barriers for succeeding in a postsecondary environment as perceived by students with learning disabilities?
3. What strategies or accommodations do students believe work in overcoming these barriers?

The study will use an intact cohort design to obtain data on the success of the educational intervention strategies. A cohort of 60 students will be recruited to participate in the study. All participants will receive assistance over the course of the study. Data will be collected through the use of an Academic Support Plan, which is developed by the student with assistance from the research staff. The frequency and intensity of the educational supports will be documented on this plan. At the end of each academic year, the cohort will be divided into two groups based on the intensity and frequency of services. A comparison will be made between the two groups to determine the level of success (i.e. GPA, academic progress, retention) among the group participants. In addition, because of the individualized nature of this study, developing and implementing specific educational supports for students with learning disabilities, the study requires a method that captures the individualized nature of the supports provided and the students' satisfaction with the interventions designed. Focus group procedures have been selected as the primary method for collecting information (Krueger, 1994; Marshall & Rossman, 1995; Wheeler, 1996). This method was selected because focus groups allow for a detailed, more in-depth process to collect information on the students with learning disabilities (Patton, 1990).

Detailed case studies will also be developed to document the specific educational supports and accommodations that were provided during the study. The case studies will help to illustrate the range of supports provided and how these supports were implemented.

Findings

The study has begun compiling initial data on the educational strategies that have thus far been developed for students. This information can be found in the attached table.

Implications by Audience

The study will provide specific information on successful educational interventions used by students with learning disabilities in college. Retention and graduation rates of <u>all</u> students are national concerns for colleges and universities. These rates are particularly discouraging for students with learning disabilities. By using an educational coaching model where students receive structured support by staff, data collected on the frequency and intensity of services and their impact will provide a wealth of information on effective approaches that enable students with learning disabilities to achieve academic success in higher education.

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Findings Implication Brief

National Center for the Study of Postsecondary Educational Supports (NCSPES)

University of Hawai'i at Manoa

Issue Area: Accessibility Policy for Postsecondary Distance Education

Author: John Anderson,
University of Hawaii at Manoa; CDS, RRTC

Summary of the Issue

Distance education is a rapidly growing mode of educational delivery that promises to increase access to postsecondary education for, among others, people with disabilities. However, some practices and technologies create new barriers, especially for students with visual and hearing disabilities. The California Community Colleges, the largest system of postsecondary education with 107 colleges and over 1.5 million students, has recently established a rigorous set of accessibility guidelines for distance education that could serve as an exemplary model for others.

Study Questions/Method

1. How will distance education policy and implementation in the California Community College (CCC) system improve access to postsecondary education for people with disabilities?
2. What are the main issues concerning the accessibility of postsecondary distance education courses for students with disabilities in the CCC system?
3. How will supports and accommodations be provided in CCC distance education to meet the standard of *equally effective communication* for all students?
4. Will distance-learning faculty be responsible to ensure accessibility in their courses? How will they be supported?

5. How might a better understanding of accessibility policy and implementation in the CCC system help other postsecondary distance education providers to increase access and success for students with disabilities?
6. This policy and implementation analysis will triangulate information from multiple sources on distance education in the CCC system, using techniques suggested by Hargrove (1975), Stiles (1993), and Pressman and Wildavsky (1973).

Findings

- In order to provide quality postsecondary distance education, colleges and universities should collaborate to redesign existing instructional and support services for virtual environments, particularly to ensure accessibility for students with disabilities. The California Community Colleges Chancellor's Office (CCCCO) plays a central role in the development of distance education system wide, and can take the lead on accessibility issues. The CCCCO interprets and suggests accessibility policy, lobbies for funding, helps provide technical support, coordinates efforts at the various colleges, and collects data. They have even been able to hire a full-time web accessibility specialist.
- To ensure the accessibility of distance education, it is important to establish clear goals, standards and accountability, which may be achieved through multiple levels of policy. In response to the US Department of Education's Office of Civil Rights, and based on federal and state policy, the CCCCO developed an important set of accessibility guidelines for distance education in all of the system's community colleges. The individual college districts ultimately have responsibility for ensuring that distance education courses meet accessibility standards.
- Student success depends on the availability of support services, particularly for students with disabilities or other special needs. California Community Colleges are working to provide a full range of support services for distance education programs.
- Faculty needs support and incentives to make accessible distance education courses. In the California Community Colleges there are: faculty awards for distance education websites that include accessibility in the criteria, technical support, and requirements at some colleges that faculty consider the accessibility of distance courses before approval. There are also faculty-training workshops with an accessibility component.
- Making distance education more accessible is interconnected with increasing the accessibility of related technologies, such as WebPages, electronic texts and audio-video production. Postsecondary institutions should work with private industry on the development of universal accessibility, Assistive technologies, and standards.

Implications by Audience

- *Postsecondary administrators* should connect with other institutions to develop high quality distance learning programs that are accessible to all. Clear goals and standards regarding accessibility need to be clearly

established at the college level. Faculty needs support in developing accessible courses. Distance education students need to be provided a full range of supports. Administrators should encourage collaboration between the university and private industry to develop accessibility standards and technologies, as well as accessible academic materials.

- *Postsecondary faculty* need to consider accessibility when designing distance education courses and should get administrative support. Important resources for faculty include technical experts, models of accessible courses, training and workshops, and any appropriate technologies.
- *Policy makers* should establish policy standards and provide funding to help make distance education equally accessible to all students. Policies should support the practices mentioned above. The CCCCO guidelines could be adapted for local use.
- *Students with disabilities* should demand a high standard of accessibility for distance education programs. The CCCCO guidelines could be used as a benchmark and to promote the standard of "equally effective communication" for all students.

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Findings Implication Brief

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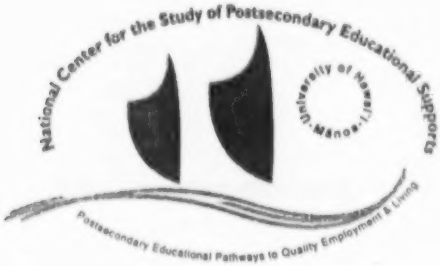
National Center for the Study of Postsecondary Educational Supports
University of Hawai'i at Manoa
Postsecondary Educational Pathways to Quality Employment & Living

Issue Area: Transition from High School to Postsecondary Education and Employment for Students with Disabilities

National Center on Secondary Education and Transition
Creating Opportunities for Youth with Disabilities to Achieve Successful Futures

Authors: Sheryl Burgstahler, Ph.D., University of Washington;
Weol Soon Kim-Rupnow, Ph.D., University of Hawaii

Summary of the Issue

People with disabilities experience higher unemployment rates and lower earnings than their non-disabled peers. They are less prepared to meet the challenges of adulthood, more likely to continue to live with their parents after high school, and engage in fewer social activities.

As the end of high school approaches, so does the termination of a structured environment and pre-college support systems. Many young people with disabilities have few friends and limited support from peers and mentors. The impact of social isolation is far-reaching, affecting not only friendships, but also academic and career success. Although higher education can enhance their employability and vocational success, fewer young adults with disabilities participate in post-secondary education and, of those who begin such programs, students with disabilities are more likely than non-disabled students to drop out of school prior to completion.

Students with disabilities can benefit from interactions with peers and adults with disabilities who are pursuing and participating in academic and career activities that they might otherwise have thought impossible for themselves. However, they are often isolated by great distances, transportation and scheduling challenges, communication limitations, and other obstacles that make it difficult for them to meet and interact in person. Computer-mediated communication (CMC), where people use computers and networking technologies to communicate with one another, can connect people separated by time and space who might not otherwise meet. Adaptive technology makes it possible for anyone to participate in computer-mediated communication

regardless of disability. The combination of adaptive technology and Internet communication can help overcome the geographic, temporal, and disability-related barriers to establishing peer and mentor support groups and thereby reduce social isolation and allow independent access to information resources. A combination of in-person activities and CMC support has the potential to improve the postsecondary and career outcomes for young people with disabilities. Research is needed to identify the long-term impact of CMC and other supports.

Study Questions/Method

The questions to be addressed in this study are:

1. What is the impact of various aspects of a model program that supports computer-mediated communication (CMC) with peers and mentors, on-campus summer study programs and other supports on the transition of high school students with disabilities to higher education and employment?
2. How can other programs apply the successful practices developed in this model program in order to improve academic and career outcomes for students with disabilities?

An exploratory study, building on earlier work (Burgstahler, 1997; Burgstahler, Baker, & Cronheim, 1997), is being undertaken to examine the role that CMC, summer study programs, and other support activities can play in easing the social isolation and advancing the academic and career goals of students with disabilities.

Participants

DO-IT (Disabilities, Opportunities, Internetworking, and Technology) is the winner of many awards, including the President's Award for "embodying excellence in mentoring underrepresented students and encouraging their significant achievement in science, mathematics, and engineering," the Golden Apple Award in Education, and the National Information Infrastructure Award. It is directed at the University of Washington. Operating since 1992, it is primarily funded by the National Science Foundation (NSF), the U.S. Department of Education, and the State of Washington. DO-IT programs work to increase the participation of students with disabilities in challenging academic programs and careers, such as science, technology, engineering, and mathematics. DO-IT Scholars, college-bound high school students with disabilities, meet face-to-face during live-in summer study programs at the University of Washington in Seattle. Year-round they use the Internet to communicate with each other and with adult mentors and to access information resources. A wide range of disabilities is represented in the group, including mobility impairments, hearing impairments, visual impairments, health impairments, and specific learning disabilities.

Data

In the first phase of the study, follow-up data will be collected from previous DO-IT Scholars through an web based questionnaire to investigate long-term impact of CMC, summer studies, and other DO-IT activities on post-secondary education and employment outcomes.

Findings

The survey has not yet been conducted.

Implications

Implications for service providers and researchers include: (a) Identification of effective components of Internet support services that are most likely to result in high levels of consumer access and satisfaction in postsecondary education and employment; (b) an exemplary transition model to help facilitate their transition support program planning and implementation overall; (c) preparation of secondary school students to be computer literate so they are able to use the computer as a tool to network, search information, and so on; and (d) provision of home computers and Assistive technology as needed for an easy access to the Internet.

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Findings Implication Brief

National Center for the Study of Postsecondary Educational Supports (NCSPES)

University of Hawai'i at Manoa

Issue Area: An Ocean of Potentiality: Inclusion of Persons with Disabilities in Science, Engineering and Mathematics

Authors: Richard Radtke, PhD, Shane Gilmore, MSc., Teresa Whelley, EdD

Summary of the Issue

Persons with disabilities are underrepresented in science, mathematics, engineering, and technology (SMET) careers, frequently to the detriment of the vitality of the United States' participation in scientific and technical enterprises. This situation is exacerbated by low career expectations for persons with disabilities among students, parents, teachers and administrators. (Cunningham & Nobel, 1998; Jones, 1997; Steven, 1996; & Raloff, 1991).

Students with disabilities are seldom advised or encouraged to prepare for occupations in science, engineering, and mathematics. Many children and youth with disabilities do not regard a vocation in science, engineering, or mathematics as achievable. Often, in a form of "self fulfilling prophesy", they do not select the necessary subjects in junior and senior high school and community college to prepare for higher education in these fields. Students with disabilities, families, school counselors, teachers and even special education teachers frequently lack an awareness of the make-up and requirements of science, engineering, and mathematics programs in higher education. Furthermore, there is often a lack of knowledge of the technology (including assistive technology) and other "accessible" resources that would make it practicable for students with disabilities to pursue science, engineering, and mathematics careers (Burgstahler, 1992).

Students with disabilities often lack access or knowledge of role models who are successful in the careers in which they are interested. The lack of interaction

between students with disabilities (Stevens *et al.* 1996) and role models can often lead to low aspirations and motivation to achieve success in science, engineering and math. Students with disabilities are often separated from potential role models by obstacles of transportation and geography (Heidari, 1996; Noe, 1988; & Smith & Jones, 1999) (a particularly acute situation on our Neighbor Islands), leaving such individuals isolated from a community of colleagues and peers.

Study Questions/Method

The goals of the Ocean of Potentiality Project are 2-fold: first, to tangibly support targeted youth with disabilities in Hawaii to envision and prepare for careers in science, math and engineering; and second, to carefully evaluate project activities and outcomes to identify the strategies that work (including appropriate assistive technology supports and the barriers that need to be overcome in order for Hawaii's schools to prepare all youth for careers in science, math and engineering. The first goal relates to "direct service" -- whereas, the second goal focuses on "systems change".

1. Support schools to initiate "inclusive", exciting, globally connected Science activities.
2. Share the findings of the project with educational planners and concerned citizens.

Data will be gathered regarding pre-intervention and post-intervention student attitudes toward career plans, academic goals and expectations, interest level in science related activities, willingness to engage in problem solving and project-based activities, and measurable levels of self esteem. Methods will include on site-observations, student/teacher satisfaction ratings, interviews, follow-up surveys, interviews and performance surveys. Follow-up data will also be gathered through one of the project's two websites: an interactive website promotes continued long-term contact with project mentors through chat-room venues and solicits student participation in videography projects—the Through the Viewfinder segments on the site are 90% student produced. Approximately 30% of students who have participated in camps have become re-involved in related activities through the website.

Camps include youths aged thirteen through mid twenties experiencing a diversity of disabilities. The program establishes at least a one to one mentor to student ratio--higher for difficult cases such as youths experiencing depression, or demonstrating hostility. Mentors are drawn from various backgrounds, including the military, education, science related fields, other professions, family and friends; many are returning volunteers. Past student experiences have included conservation activities with Fish and Wildlife; tide-pool exploration; beach geology--effects of erosion; kite design; taro patch work, and a cattle ranch excursion. Access to technology--an important aspect of camps--includes a full computer lab with twenty computers, peripherals—scanners, photo imagery, digital and video cameras, and a computer exploration—tear down experience. All camps include a community service component, for example a

beach clean up and community dog wash for elderly and disabled Hansen's disease survivors at Kalaupapa

The evaluation plan will involve two major activities: impact assessment as outlined above and monitoring of the implementation process. Examples of data to be gathered under implementation will include: reports on preparatory activities; preparation of curriculum and teaching materials; identification of target population at the school level; criteria for selection; dissemination of information; etc.

Findings

While the project is only in its third year of funding, preliminary data suggest:

- Students are inclined to increase levels of involvement in school-based science activities as a result of involvement.
- Several older students have reportedly enrolled in related subjects at the community college level.
- Increased expectations have assisted in raising student goals.
- Peer support contributes to the discovery-learning environment.
- Long term mentorship associations can be successfully formed.
- Accessibly issues can be overcome.

Implications by Audience

- Secondary education students and their parents need to know that physical limitations are not a barrier to successful science careers.
- Secondary educators and counselors need to know that application science and field research are effective and motivating.
- There needs to be an increased awareness of applied/ field based program by secondary educators.
- Secondary students need to broaden their horizons.

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Findings Implication Brief

National Center for the Study of Postsecondary Educational Supports (NCSPES)

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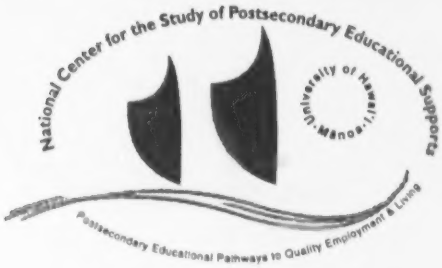
National Center for the Study of Postsecondary Educational Supports
University of Hawai'i at Manoa
Postsecondary Educational Pathways to Quality Employment & Living

Issue Area: Transition from Two-Year to Four-Year Institutions for Students with Disabilities

National Center on Secondary Education and Transition
Creating Opportunities for Youth with Disabilities to Achieve Successful Futures

Authors: Sheryl Burgstahler, Ph.D., Lyla Crawford, University of Washington, Collaborative Site, Joie Acosta, University of Hawaii, Manoa, CDS, RRTC

Summary of the Issue

Students with disabilities in two-year colleges face challenges as they transition to four-year schools. Some are similar to those faced by their non-disabled peers, however some are related to their disabilities. This study was undertaken to determine the concerns of students with disabilities in two-year institutions of higher education (community and technical colleges) as they transfer to four-year schools, and steps that can be taken by both two-year and four-year institutions to improve the postsecondary outcomes of these transfer students.

Study Questions/Method

1. What are students most concerned about when they are transferring from a two-year to a four-year postsecondary program?
2. How can two-year and four-year institutions help students with disabilities successfully transfer to four-year schools?

To answer the research questions posed in this study, quantitative and qualitative research methods were utilized. Methods included a quantitative survey of one hundred and nineteen disabled students from nineteen colleges in Washington State to explore the concerns of students with disabilities as they transfer from two-year schools to four-year institutions. After responding to the Likert scale questions, they were also given a chance to respond to the question in an open-ended format.

Furthermore, a survey was distributed to the directors of disabled student services offices at 2409 postsecondary institutions; 15% of the offices responded. The survey instrument asked respondents to rate challenges faced by two-year college students. In addition, a total of twenty-one faculty and staff from seven postsecondary institutions in Washington State participated in focused discussions to supplement the responses from the survey and explore practical interventions for institutions to implement.

Findings

Concerns of college students with disabilities regarding the transfer from two-year to four-year schools

- Students rated the top concerns when transferring to a four-year institution in the following order: the cost of the program, skills in self-advocacy, differences in social life (making new friends), availability of educational accommodations, access to technology, differences in academic requirements (keeping up with other students academically), and availability of tutors. These were rated from most important to least important, respectively.
- In a separate open-ended response, students listed concerns such as differences in disabled student services, inadequate financial support, the entire transferring process housing/transportation difficulties, and differences in academic requirements.

Challenges faced by postsecondary students with disabilities

- Disabled student services staff rated the challenges faced by transfer students with disabilities in the following order: unprepared to address the differences in academic requirements, poor study skills, inadequate pre-college academic preparation, lacks skills in requesting accommodations and self-advocacy, lack of role models and mentors with disabilities, inadequate financial support, difficulty in adjusting to the differences in support services, and difficulty adjusting to the differences in social life.
- Postsecondary faculty and staff participating in focus groups reported that challenges faced by students with disabilities transferring from two-year to four-year institutions include: moving away from home, understanding and working through the transfer process, securing financial support, meeting admissions requirements and academic standards, adjusting to differences in disability documentation requirements and disability-related services offered, and adjusting to a larger, less personal environment.

How Four-Year Institutions Can Increase the Transfer Success Rate

- Make sure that campus recruiters, admissions staff and academic counselors are knowledgeable about disabled student services.
- Include information about services for students with disabilities in all general student orientations, student handbooks and other publications and programs.

- Attend two-year college career/transfer "fairs" to share information about services and programs for students with disabilities.
- Educate faculty and staff about disability and transfer issues, accommodation strategies and resources. Create summary sheet of all intake and documentation requirements for all state schools and standardize if possible.
- Address campus access issues (dorm rooms, transportation, technology) proactively.
- Create a publication and World Wide Web pages with procedures and campus map/overview.
- Have separate orientation sessions for students with disabilities.
- Simplify the process when possible.

How Two-Year Institutions Can Increase the Transfer Success Rate

- Disabled student services and other campus staff should become more familiar with four-year colleges' policies, procedures, programs, and services.
- Educate the faculty and staff about disability and transfer issues, accommodation strategies and resources (e.g. new faculty orientations).
- Share information about transfer strategies and steps using publications and the World Wide Web.
- Assure documentation used is acceptable to most four-year schools and give students a copy of their disability documentation to take to four-year schools.
- Provide academic and career counseling to students with disabilities, which may include how a four-year degree might support their goals.
- Encourage transfer students to select four-year schools early and help them make good choices.
- Help students develop transition plans and work through the transfer process (e.g. has to fill out financial aid forms).
- Help students develop self-advocacy skills.
- Arrange visits to four-year schools for students with disabilities so they can learn about services, sit in classes, talk to faculty, and meet other students with disabilities.

How Two-Year and Four-Year Schools Can Work Together to Increase Transfer Success Rate

- Visit each other's campuses to become more aware of campus climate, offerings, and services.
- Develop a cooperative relationship between disabled student services offices; coordinate activities; cooperate and follow through; share resources.
- Coordinate acceptance of documentation.
- Create a state/regional advisors group of faculty, staff and students from two-year and four-year schools to advocate for transfer students with disabilities and discuss program and policy issues.
- Cosponsor transfer fairs that include disabled student services information.
- Coordinate campus visits between two-year and four-year students with disabilities.

- Facilitate contact between two-year and four-year students with disabilities; coordinate peer mentoring.
- Develop a one-on-one handoff system for students with disabilities.

Implications by Audience

- There is a need for student support staff to do more to ease the transition for students with disability. Specific examples for four-year staff and two-year staff are given.
- There is a need for student support staff to work together to create cooperative relationships between disabled student services offices to help students successfully transfer.
- There is a need for skill improvement by students with disabilities in such areas as self-advocacy, requesting accommodations, and study/time management/ organization.
- There is need for further research in this area. The present study was limited by response rate to the staff survey and a narrow participant population. Generalizing these results is not suggested.
- The aforementioned suggestions for making transfer from two-year to four-year postsecondary institutions more successful can offer valuable insights to service providers, faculty, staff and students in secondary institutions.

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National Capacity Building Institute Summer 2001
Discussion Group Worksheet

Issue Area: _____

Group#_____

Recorder: _____

What is the Issue?

Why is this an Issue?

Implications for (research proven) solving the Issue?

Recommended research, TA, training and information dissemination?